THE IRON TRADE REVIEW

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MARKETS QUIET

WITH SOME CONCESSIONS ON SPOT PIG IRON.

Transactions Few and Inquiries Limited.—Important Buyers of Coke Preparing to Contract.—Railroad Buying.

With the coming of hot weather, midsummer dullness has settled upon the iron market so far as new business is concerned. With the exception of the usual shutdown of mills July 1 for repairs, activity of the plants will continue, as orders on hand are ample to keep all the works busy.

Pig Iron Concessions

The pig iron market is somewhat easier, prices for prompt shipment being lower and in some cases concessions from 25 to 50 cents having been made for iron for future delivery. No important transactions are reported and inquiry is light, but users are urging shipments on contracts.

Activity in Billets

The selling of billets by several large interests, which usually convert crude steel into finished products, has relieved the strain, but the demand is fully as great as the supply and prices have not changed. There has been considerable activity in the billet market in Chicago.

Railroad Purchases

Railroads have been conspicuous in orders and specifications for structural material, the American Bridge Co. having received contracts and specifications for 16,000 tons for fabricated material from western lines, and numerous smaller orders. The principal producer still has a very large tonnage of plates undelivered, but independent interests are delivering more promptly, and some mills which have been selling at high premiums are showing more eagerness to get new business. One large user of sheets has contracted for its requirements for the year beginning July 1. Tin plate specifications have not been very heavy. Investigation shows that reports of heavy damage to crops by frosts have been exaggerated. In merchant pipe two contracts for large sizes have been awarded and several important inquiries are pending.

Larger Car Loads

Effective July 1, many railroads will advance the minimum amount for a carload from 15 to 18 tons, and for this reason many buyers are increasing their orders in order to obtain the benefit of the lower rates and lower prices of carload lots.

Coke and Old Material

Inquiries from several large foundry interests for coke for the year beginning July 1 are pending. Although the market does not show uniform improvement, it is considerably firmer in several centers. Old material is strong at Chicago and firm in most centers, but dull at Pittsburg.

Closing of Steel Mills

The closing of two tidewater steel plants, which will hereafter confine their activities to fabricating and erecting, illustrates the difficulty of steel works without blast furnaces carrying on a profitable business in prosperous times when prices of pig iron are high. The closing of these plants has no important bearing on the general situation.

No Scale Arranged.—The wage scale conference between the Amalgamated Association and the Republic Iron & Steel Co. last week adjourned without agreement.

STEEL PLANTS CLOSED.

New Milliken Works Idle.—Passaic Company Stops Steel Making.

(Special Telegram.)

New York, June 19.—The past week has witnessed the closing down of two important steelmaking plants on the Atlantic tidewater. Following the appointment of receivers for the properties of Milliken Bros., Inc., about 10 days ago the steel department has been shut down and the receivers will devote their entire attention to the operation of the fabricating works, buying materials wherever necessary to carry out the structural contracts on hand at the time of the failure. It is stated, however, that there is a considerable accumulation of finished materials at the works and that no extensive purchases will be made in the early future. The closing of the steel plant means that only the old works will be operated and that the modern steel producing plant, the building of which precipitated the failure, will be allowed to remain idle. About 1,500 workmen have been thrown out of employment and are scattering to steel mills in other localities. In many instances, they were skilled men and were originally secured with considerable difficulty. It is understood that certain of the operating officials connected with the steel department have already become connected with outside interests.

The Passaic Steel Co., Paterson, N. J., has closed its steel-making plant and it is announced, will devote its entire attention to its bridge and structural department. The high cost of producing steel, with pig iron at its present level, has led the company to this decision, as it can purchase finished materials more cheaply in the outside market.

The Paterson steel plant had been turning out about 100 tons of steel daily, not having been operated to capacity of late. The Milliken output was about 300 tons daily.

THE WEEK IN IRON CENTERS.

PITTSBURG

Inquiry for Coke Improves—Delayed Shipments of Plates—Pig Iron Quiet.

Office of THE IRON TRADE REVIEW, 521 Park Bldg., June 19.

There has been no action in the Pittsburg market during the week under review; that is, no action that would in any way affect general conditions. There have been two transactions between large interests, but they were of a nature the details of which would not be divulged, and were largely in the nature of accommodations to help out in a pinch when an immediate supply of material of a special kind was not forthcoming.

There has been an improvement in the demand for structural shapes, but the demand has not been enough to create more than passing notice on account of the comparatively light bookings made during the past few months. The inquiries are all for small tonnages, and it is only when considered in the aggregate that they would be noticed at all.

The movement in steel bars continues, although it is not as strong as a week ago, and it is estimated that about 75 per cent of the agricultural implement interests, which have been doing the recent buying, have covered for their requirements. There is an enormous demand for deliveries in plates, and inability to secure this material as rapidly as expected undoubtedly has had its influence against placing new business. The leading interest will have difficulty in making shipments on all plate specifications placed for this year, and some of the business will be carried over. This will delay other interests, the steel car manufacturers more than anybody else. Contracts have been placed for the plates and shapes for new lake freighters for early 1908 delivery, and more are expected very soon.

With the approach of summer the demand for wire products has fallen off, but the mills are still behind in their deliveries, and since last fall have been unable to accumulate enough stock at the mills to guarantee a full assortment.

Contracts for tin mill products have not been specified against as freely as manufacturers would like to see for the past three weeks, but the situation is expected to improve with continued warm weather.

From an inquiry standpoint, coke has improved and there are several large sized inquiries for foundry coke for the year beginning July 1. Among these are noted the Westinghouse Electric and Westinghouse Machine, Mesta Machine Co., and Standard Sanitary. While $3.25 is being generally quoted on foundry coke to the ordinary last half inquiry, it is anticipated this business will be placed around $3.10, at the ovens.

Pig Iron.—We have not heard of any third quarter or last half pig iron transactions during the week. The United Steel Co., of Canton, is in the market for 500 tons for prompt shipment, and several carload deals for July and August have been put through, but aside from this the market has been extremely quiet. Many of the merchant furnaces are not even receiving inquiries. This is due to their well known sold up condition. Corrigan, McKinney & Co., and the Cherry Valley interests still have some foundry iron for most any deliveries. We note several sales of a carload each of No. 2 northern foundry at $26 valley, and one carload of No. 1 at $27. Bessemer and basic are nominally $23.50 to $24.00 valley furnace, but as far as can be learned no sales have been made during the week. The Bessemer Association, which is sold up for the last half, has not fixed its price for first quarter or first half of next year, but other interests are pretty generally agreed that $22 will be the opening price, and, as noted several weeks ago, a round tonnage of malleable Bessemer for this delivery sold at $22 furnace. Southern furnaces are quoting $18.50 Birmingham for first half of next year, but only a few small tonnages have been sold. On last half delivery we quote:

Bessemer, Valley	$23.50 to 24.00
Bessemer, Pittsburg	24.40 to 24.90
No. 1 Foundry, Pittsburg	25.40 to 26.30
No. 2 Foundry, Pittsburg	24.40 to 25.30
Gray Forge, Pittsburg	23.40 to 24.30
Basic, Valley	23.50 to 24.00
Basic, Pittsburg	24.40 to 24.90

Ferro-Manganese.—The inquiry during the week has been small and prices continue weak, although there already has been some talk of the possibilities of a scarcity later in the year on account of renewed troubles in Russia, the source of a large part of the manganese ores. For spot shipment, we quote $65 delivered Pittsburg and for last half $63 to $64, Pittsburg.

Imported 50 per cent ferro-silicon is quoted $110 Pittsburg; domestic 12 per cent, $36; 11 per cent, $35, 10 per cent, $34; with the lower grades imported ferro-silicon, $1 higher.

Plates.—The leading interest has on its books such a vast volume of plate obligations that it will do well to meet them before the first of next year. Independent manufacturers, while they have large tonnages on the books, are not filled up to this extent and can make delivery promises from three to four months. One or two interests whose policies are not to book for any considerable period ahead are in shape to make deliveries in from two to three months and are securing an advance of $1 to $2 over the official quotation. Buyers are pressing for increased deliveries. During the past week, lake ship building yards have closed for the plates and shapes for two lake course freight carriers. We quote as follows:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.80c to 1.90c f. o. b. mill Pittsburg for prompt shipment, and 1.70c base Pittsburg on future deliveries. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c. A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than four inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gages under ¼-inch to and including 3-16-inch plate on thin edges, 0.10c; under 3-16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—One of the largest users of black sheets during the week closed for the requirements of the year beginning July 1. Specifications continue about normal and deliveries have improved on light black and to some extent in galvanized. Aside from the one big contract mentioned, business has been only fair and for the next few months no change is expected except

from jobbers as their short term contracts expire. We quote:

Black steel sheets one pass, cold rolled, Nos. 11-12, 2.20c; Nos. 13-14, 2.25c; Nos. 15-16, 2.30c; Nos. 17-21, 2.35c; Nos. 22-24, 2.40c; Nos. 25-26, 2.45c; No. 27, 2.50c; No. 28, 2.60c; No. 29, 2.75c; No. 30, 2.85c; galvanized, Nos. 10-11, 2.65c; Nos. 12-14, 2.75c; Nos. 15-16, 2.85c; Nos. 17-21, 3.00c; Nos. 22-24, 3.15c; Nos. 25-26, 3.35c; No. 27, 3.55c; No. 28, 3.75c; No. 29, 4.00c; No. 30, 4.25c. Corrugated roofing, $1.85 per square for No. 28 painted, 2½-inch corrugation, and $3.25 per square No. 28.

Tin Plate.—There is little change in the tin plate situation and can manufacturers are evidently following a conservative policy. Specifications are up to normal for June, but June is always one of the lightest months of the year. From practically all of the large industrial concerns that gather crop reports, word is being received that frost reports have been over-estimated and with each day of warm weather this situation will continue to improve. Prices are unchanged, and we quote as follows:

Coke tin plate 100-pound basis, 14 x 20, $3.90 f. o. b. mill, Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—The new rail business has been comparatively light and as mentioned in these columns for the past two weeks, is expected to remain so until after the meeting of the railroad association and rail manufacturers. No definite date has been set for this meeting.

There is a good demand for light rails and the tonnage booked for the week was about 2,000 tons. There is no change in the spike situation and reasonably prompt delivery can be made on standards. The heavy demand for hand spikes continues and deliveries are more extended. Prices are unchanged and we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $40; 12-pound, $36 to $37; 16-pound, $35 to $36; 20-pound, $34 to $35; 25 to 45-pound, $33 to $34; angle splice bars for standard sections, $1.65; standard spikes for forward deliveries, $2.30 to $2.35 Pittsburg; hand spikes, $2.50 Pittsburg.

Hoops, Bands and Cotton Ties.—This market has been quiet and the big volume of buying expected before July 1 is only fairly started. The big cooperage companies have not closed, but are expected to do so within a short time. Specifications on both hoops and bands are very heavy and contracts in most instances are fully specified. The cotton tie market is dull and will remain so until the early fall. We quote as follows:

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel. Cotton ties, 95½c per bundle.

Steel.—The fact that the Cambria Steel Co., and Lackawanna Steel Co. have been selling steel billets in the open market in lieu of rolling them out into shapes and other finished lines has had a tendency to somewhat ease up the recent tight situation, but only as far as the supply is concerned. The price remains $30.50 to $31, Pittsburg on 4 x 4. The Carnegie Steel Co. bought 10,000 tons at the former figure, and this, coupled with the purchase from the New York State Steel Co., 60 days ago makes it a buyer to the extent of about 25,000 tons of semi-finished steel during that time. Sheet bars are nominally quoted at $31, mill, Pittsburg or Youngstown.

Merchant Bars.—The movement in steel bars has been steady and there are still several of the large agricultural implement interests which have not covered for their year's requirements, but they are expected in before July 1. A conservative estimate of the bookings by these interests is 75 per cent of the total requirements. Taken contract for contract, new business is slightly heavier than it was last year. There has been a heavy bar iron movement and one interest during the week sold 8,000 tons for western shipment at 1.60c base Pittsburg. For delivery in the Pittsburg district 1.75c to 1.80c still holds good. We quote as follows:

Common iron bars, 1.75c to 1.80c Pittsburg in carload lots and over, 1.80c to 1.85c in less than carloads; Bessemer steel bars, 1.60c net, for forward deliveries; 1.85c to 1.90c out of stock; plow and cultivator, 1.60c, net; channels, angles, zees, tees, under three inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 50 per cent off in carload lots, and 5 per cent off in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. The price of planished and machine straightened tire is 1.80c, base, half tire extras. Iron finished tire up to 1½ inch and over to be sold on regular bar basis of 1.60c base, half extras, steel card.

Structural Material.—Inquiry for structural shapes has improved to a considerable extent and a large increase over the preceding week has been made during the week under review. There have been no large contracts for building material but the aggregate of smaller lots has brought the tonnage up to a figure above any single week for the past month. These smaller inquiries run 300 to 400 tons and include quite a few bridge jobs. We quote:

Beams and channels, 15-inch, and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees, 1.70c; angles from three to six inches and inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.80c base.

Wire and Wire Nails.—A slight decrease in the volume of new business is noted, but the specifications against existing contracts are as heavy as heretofore. Aside from the fact that an unusually large tonnage is being booked for this time of the year with the summer quiet period almost at hand, no unusual features have developed. We quote as follows:

Wire nails, jobbers' carload lots, $2; retailers' carload lots, $2.05; less than carloads, $2.10; painted barb wire, $2.15, for jobbers in carloads; retailers in carloads, $2.20; and less than carload, $2.30, with 30c for galvanizing; plain wire, $1.85 for jobbers, and $1.90 by carload.

Merchant Pipe.—Several inquiries for line pipe of the larger sizes ranging 12, 14 and 16 inches and running from six to ten miles have been in the market and two of them have resulted in contracts being placed, the La Belle Iron Works, of Steubenville, O., and Spang, Chalfant & Co., of Pittsburg, getting the business. Except in special instances the leading interest is trying to avoid this class of business on account of the filled up condition of its order books. The volume of business for the smaller sizes of merchant pipe continues unabated and delivery promises are either very indefinite or set far in the future. We quote the following consumers' discounts of the leading interest subject to one point and five to jobbers in large lots:

	—Steel—	
	Black.	Galv.
⅛ and ¼ inch	65	49
⅜ inch	67	53
½ inch	69	57
¾ to 6 inches	73	63
7 to 12 inches	70	55
EXTRA STRONG PLAIN ENDS.		
⅛ to ⅜ inch	58	46
½ to 4 inches	65	53
4½ to 8 inches	61	49
DOUBLE EXTRA STRONG PLAIN ENDS.		
½ to 8 inches	54	43

Iron Pipe.—The largest maker of iron pipe in this district is booked up to the extent that no orders carrying with them delivery promises short of five or six months are being taken in assorted sizes, but on carload lots, special sizes, par-

ticularly 4 to 6 inches, promises of four to five weeks are being made. We quote the following consumers' discounts:

RANDOM LENGTHS WITH THREADS AND COUPLINGS—CARLOAD LOTS.	Black.	Galv.
⅛, ¼ and ⅜ inch	59	43
½ inch	62	51
¾ and 6 inch	67	57
7 and 8 inch	62	46
PLUGGED AND REAMED.		
1 to 4 inch	65	55
EXTRA STRONG PLAIN ENDS.		
⅛, ¼ and ⅜ inch	52	40
½ to 4 inch, inc	59	47
4½ to 8 inch	55	42
DOUBLE EXTRA HEAVY PLAIN ENDS.		
½ to 3 inch, inc	48	37

Boiler Tubes.—The inquiry for both iron and steel boiler tubes is practically the same in volume as it has been for several months past, this volume being practically the capacity of the mills to manufacture and in many instances the delivery dates have been extended on new business. We quote the following official discounts:

	Iron.	Steel.
1 to 1½ inch	42	47
1¾ to 2¼ inch	42	59
2½ inch	47	61
2¾ to 5 inch	52	65
6 to 13 inch	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Coke.—The inquiry on both foundry and furnace coke has improved during the week, but there has been no noticeable improvement in the volume of business placed. Among the inquiries out for foundry coke we note the Westinghouse Electric & Mfg. Co. and the Westinghouse Machine Co., both for twelve months beginning July 1, and the Mesta Machine Co. The Standard Sanitary Co. has bought for Louisville, but not for its other plants. Some foundry business has been closed on the basis of $2.35 at the ovens for standard foundry grades. For last half we quote $3 to $3.10. Spot furnace coke is quoted $2 to $2.10. The inquiry has been better than last week, but nothing of importance has been closed. The number of furnace suspensions is fewer than last week. Reports from the region are to the effect that a large quantity of coke is being stocked at the ovens. For last half furnace coke on contract we quote $2.25 to $2.40.

Old Material.—The scrap market is quiet and dull, there being but very little buying by consumers and dealers are endeavoring to dispose of their accumulations secured recently upon expectation of an advance in steel scrap on account of the pig iron scarcity. It has developed, however, that consumers are generally pretty well covered and not inclined to buy at this time. Prices are unchanged and we quote as follows, gross tons delivered in the Pittsburg district:

Heavy melting scrap, $18.50 to $18.75; re-rolling rails, $19 to $19.50; bundled sheet scrap, $16 to $16.50; iron axles, $31 to $31.50; old iron rails, $23 to $23.50; No. 1 wrought scrap, $18.50 to $18.75; old car wheels, $24.50 to $25; low phosphorus scrap, $23 to $23.50; machine shop turnings, $15.25 to $15.75; axle turnings, $15.75 to $16; cast borings, $13.50 to $14; No. 1 cast scrap, $21 to $21.50.

CHICAGO

Recession in Prices for Spot Pig Iron —Heavy Railroad Orders and Specifications.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, June 18.

Railroad orders and specifications are the most pronounced features of the market this week. Structural steel shares to the greatest extent in this demand, the American Bridge Co. having received contracts and specifications for an aggregate of 16,000 tons of fabricated material from western lines. The local mill has also received an order for 10,000 tons of rails for 1908 shipment from a southwestern road, and a specification for 1,000 tons of plates for car building work, while an order for 2,000 tons of axle billets was let by another western car plant. Another conspicuous feature of the market this week is the freer offering of intermediate steel. Eastern mills are the principal factors in this tonnage, these having closed contracts for an aggregate of 7,000 tons of Bessemer and open-hearth billets for early shipment. The only weak spot is in pig iron, and immediate shipment of this has declined from 50 cents to $1.00 a ton. Structural and plate specifications from consuming sources outside of railroads are light, and very little premium business is now offered. There is no diminution in the demand for merchant pipe and boiler tubes; neither is there any improvement in shipments on delinquent contracts. Considerable February business is still undelivered, and mills are advising their customers to place contracts now for October to March shipments in order to insure delivery at the required time. Scrap iron continues to soar in value. Demand is brisk and the supply is short.

Pig Iron.—The first recession in 12 months has happened. Spot iron, which had soared unrestrainedly for this period, reaching the highest level in several years, has declined from 50 cents to $1.00 a ton. The market for immediate shipment is now $22.00 Birmingham for southern No. 2 foundry, and $26 Chicago for northern No. 2. The decline has been imminent for several weeks. Spot demand has gradually decreased since furnaces commenced overtaking their delinquent shipments, and for the last three weeks it has existed in name only. Further recessions are anticipated before the summer has waned. Spot prices are an excrescence and an unhealthy symptom, and the market will be stronger for their entire removal. Melters are getting shipments in very liberal quantities and with resales constantly occurring, there seems little doubt that this desired end will be accomplished very soon. No change has occurred in quotations for forward deliveries. No. 2 foundry for the third quarter seems firm at $21.50 Birmingham, and for the fourth quarter at $20.00 Birmingham, while northern No. 2 is equally as strong at $25 Chicago.

There is, however, very little demand for these shipments. Our quotations are unchanged as given below. The minimum prices are for the fourth quarter; the maximum for third quarter deliveries:

Lake Superior charcoal	$ 27.50
Northern Foundry No. 1	25.50
Northern Foundry No. 2	25.00
Northern Foundry No. 3	24.50
Northern Scotch Foundry	25.50
Southern Foundry No. 1	24.85 to 26.35
Southern Foundry No. 2	24.35 to 25.85
Southern Foundry No. 3	23.85 to 25.35
Southern Foundry No. 4	23.35 to 24.85
Southern No. 1 Soft	24.85 to 26.35
Southern No. 2 Soft	24.35 to 25.85
Southern Gray Forge	22.85 to 24.35
Southern Mottled	22.60 to 24.15
Southern Silveries, 4 per cent to 6 per cent Silicon	28.85 to 29.85
Jackson Co. Silveries, 6 per cent.	29.40 to 29.90
Jackson Co. Silveries, 8 per cent.	30.40 to 30.90
Jackson Co. Silveries, 10 per cent	31.40 to 31.90
Malleable Bessemer	25.00

Billets and Rods.—Sales of billets have been active this week. In the aggregate, about 10,000 tons have been closed. There were two lots of 2,000 tons each; one order for 2,000 tons for axle billets and a round lot of rerolling billets. Prices are unchanged at $37 Pittsburg for wire rods, and $36 to $38 Chicago for forging billets.

Merchant Bars.—There is a fair demand for bar iron. New tonnage in steel bars is light, but specifications are heavy. Buying is active for hard steel angles, bedstead makers covering for their year's requirements. The competition for this business is keen and prices show a wide variation. The movement of iron and steel bars from jobbers' stocks continues light, specifications having shown a gradual decrease for some weeks. We quote carload lots, Chicago delivery, as follows:

Bar iron, 1.78c to 1.83c; soft steel bars and bands, 1.78c half extras; soft steel angles, less than 3 x 3, 1.88c; hoops, 2.18c base, full extras; planished or smooth finished tire steel, 1.98c; iron finish, up to 1½ x ½ inch, 1.93c base; iron finish, 1½ x ⅛ inch

and larger, 1.78c base; channels for solid rubber tire ¾ to 1 inch, 2.28c, and 1⅛ inch and larger, 2.18c; smooth finished machinery steel, 2.18c; flat sleigh shoe, 1.83c; concave and convex sleigh shoe, 2.08c; cutter shoe, 2.36½c; toe calk steel, 2.33c; railway spring, 1.98c; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are irregular, though the official prices are without change at 50 per cent off in car lots, and 45 per cent in less than carload lots, base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 2.25c full extras; soft steel rounds, and square, 3-inch and larger, $2 per 100 pound base; flats, 2 inches to 4 inches by ⅛ inch and larger, $2 per 100 pounds base; 4½ inches by 5 inches and 6 inches by 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands, $2 half extras; soft steel hoops, $2.50 full extras. Other sizes not mentioned above, $2 per 100 pounds base, plus half extras.

Plates.—The purchase of the 6,000 steel cars by the Steel Corporation will not add appreciably to the tonnage of the local mill's books. All the western car builders are under contract for their season's requirements and are specifying full quotas against the same. The western mills are very busy, every ton produced going into immediate consumption. Early deliveries still command premiums, but these have been reduced. We quote as follows:

Plates, ¼ inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.70c to 2c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago, 18c per 100 pounds for carload lots, and 20c per 100 pounds for less than carload lots. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼ inch and heavier up to 72 inches wide, 2.20c; 3-16 inch up to and including 60 inches wide, 2.30c; 3-16 inch 72 inches wide, 2.55c; No. 8 up to 60 inches wide, 2.50c. Flange steel, 25c extra; heads, 25c extra.

Sheets.—Specifications and new tonnage are without appreciable diminution. Mills are operating to capacity and are gradually overtaking delinquent shipments. Prices are without change as follows:

Black sheets, Nos. 8, 9 and 10, 1.90c Pittsburg; No. 28, 2.60c Pittsburg. Galvanized sheets, No. 28, 3.75c Pittsburg. Freight to Chicago, 18c per 100 pounds for carload lots, and 20c for less than carload lots. Jobbers' prices on carload lots and less from store are as follows:

No. 10, 2.50c to 2.55c; No. 12, 2.55c to 2.60c; No. 14, 2.60c to 2.65c; No. 16, 2.70c to 2.80c; Nos. 18-20, 2.80c to 2.90c; Nos. 22-24, 2.85c to 2.95c; No. 26, 2.90c to 3c; No. 27, 2.95c to 3.05c; No. 28, 3.05c to 3.15c; No. 30, 3.35c to 3.45c. Galvanized sheets, No. 10 to 20, 3.50c to 3.55c; Nos. 22 and 24, 3.65c to 3.75c; No. 26, 3.85c to 3.90c; No. 27, 4.05c to 4.15c; No. 28, 4.25c to 4.35c; No. 30, 5.40c to 5.45c.

Structural Steel.—A long-deferred specification for 7,000 tons of fabricated shapes has been received by the American Bridge Co. from the Northern Pacific. The same interest has also received a new contract for 6,000 tons of fabricated shapes from the Great Northern railway, and about 3,000 tons for miscellaneous purposes from a turntable to a 150-foot span from other roads. The only new project up for figures is a government bridge across the Mississippi river to be erected near Fort Snelling, Minn. With the approaches, this bridge will measure about 1,000 feet, and will require in the neighborhood of 2,500 tons of steel. Considerable cancellation and withdrawal of small jobs is going on all over the country. Specifications on contracts placed with local mills and jobbers are very light; new tonnage is also coming in slowly. Prices are without change as follows:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from Pittsburg to Chicago, 18c per 100 pounds for carload lots, and 20c per 100 pounds for less than carload lots. Quotations from store are as follows:

All angles, three inches and larger, including six inches, $2.10 per 100 pounds; angles over six inches, $2.15 per 100 pounds base; beams, 3 to 15 inches inclusive, $2.10 per 100 pounds base; channels, three inches and larger, $2.10 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—New rail tonnage for 1908 is coming in slowly. The only order for that delivery closed by the Chicago mill involves 10,000 tons, for a southwestern road. Specifications for 1907 rolling are to full contract requirements. A number of small rail contracts for this year's delivery have been taken from electrical roads, but the tonnage is not of interesting proportions. Light rails and track supplies are active. Prices are as follows:

Bessemer rails, $28 to $30; less than 500-ton lots, $32; open-hearth rails, $29; light rails, Bessemer, 30 to 45-pounds sections, $35; 25-pound, $36; 20-pound, $37; 16-pound, $38; 12-pound, $39, and lighter sections down to 8-pound, $45.50, all f. o. b. mill. Track supplies vary in price according to quantity and delivery. On orders accompanying rail contracts for future delivery, we quote angle bars, 1.65c; spikes, 2.35c; bolts with square nuts, 2.65c; with hexagon nuts, 2.80c. For carload lots or less, for prompt shipment, the following prices are asked: Angle bars, 2.25c to 2.75c; spikes, 2.60c to 2.70c; bolts with square nuts, 2.85c; with hexagon nuts, 3c.

Cast Iron Pipe.—New tonnage is restricted to routine orders for betterments and slight extensions. This is the dull season for pipe foundries and no improvement is expected for some weeks. Prices are without change as follows: Four-inch water pipe, $38.60; 6 to 12-inch, inclusive, $37.60; gas pipe, $1.00 a ton higher.

Merchant Pipe and Boiler Tubes.—No diminution is noted in the volume of business. The entire output of pipe and tube mills goes into immediate consumption. Mills are accepting no orders for specified deliveries. The congestion on order books is too severe to warrant any promises as to date of shipment. In some instances, February specifications have not yet been shipped, and the chances of overcoming this gap this year are very remote. This condition has induced an active buying for forward requirements, and quite a number of contracts have been placed for shipment six and nine months hence. Prices are very firm. Mill quotations, carload lots, Chicago delivery, are given below. On steel pipe, jobbers are allowed a concession of one point and five per cent additional from the schedule in force.

MERCHANT PIPE.

	—Steel— Black.	Galv.
¼ to 6 inches, inclusive.....	71.2	61.2
BOILER TUBES.		
	Steel.	Iron.
2¼ to 5 inches, inclusive.....	62.2	49.2

Mill quotations on iron pipe are from four to five points higher than above. A concession of one point from the following quotations, is allowed by Chicago jobbers on orders for shipment from local warehouse stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

	Black.	Galv.
⅛ to ¼ inch.....	60	44
⅜ inch	62	48
½ inch	64	52
¾ to 6 inches.....	68	58
7 to 12 inches.....	64	49

Minimum prices for wrought iron pipe, carload lots or greater, from Chicago stocks, are as follows: ⅛ in. to ¼ in., 55; ⅜ in., 57; ½ in., 59; ¾ in. to six inches, 64; 7 in. to 12 in., 59. Boiler tubes from store are un-

changed at 60 off for steel; 47½ for iron, and 42½ for seamless, base sizes, 2¾ inches to 5 inches.

Wire Products.—The leading interest states there is no slackening in the demand for wire materials. Deliveries of nails and fencing are very slow, the orders taken for current shipment far exceeding capacity. Jobbers complain of low stocks, and their appeals for shipments are frequently supplemented with personal visits. To tide over immediate pressing needs, mills often resort to the shipment of a car of assorted materials by fast freight. We quote prices to jobbers as follows: Wire nails, $2.18; painted barb wire, $2.33; galvanized barb wire, $2.63; smooth annealed wire, $2.03; smooth galvanized wire, $2.33; polished staples, $2.28; galvanized staples, $2.58. Carload lots to retailers, five cents higher; less than carload lots, 15 cents higher.

Coke.—There is no change in the local market. Supply is plentiful and the demand is light. Prices are soft and easily susceptible to pressure. For last half deliveries, we quote Connellsville furnace coke at $2.25 to $2.40 ovens, and 72-hour foundry coke at $3.00 ovens.

Old Material—Except that the market continues to advance, there is no change in local conditions. The movement of scrap values is one of the surprises of the year. One dealer explains it as a protracted readjustment of prices with other materials. Each upward advance is well supported with buying orders, and it is not beyond the truth to state that any and every kind of scrap can be readily disposed of. That the shortage is great is evidenced by the disposition shown by dealers to put in higher bids on railroad lists upon learning that their original bid was too low. The C., M. & St. P. list for 2,100 tons, mentioned a week ago, has been disposed of at attractive prices. The bidding was very active. We have revised a number of our prices, and quote as follows, gross tons being given in the first paragraph:

Old Car Wheels	25.25 to 25.75
Old Iron Rails	24.50 to 25.00
Rerolling Rails (3 feet and over)	19.25 to 19.75
Old Steel Rails (3 ft. and under)	19.00 to 19.50
Light Section Relayers, 45 lbs. and under, subject to inspection	30.00 to 32.00
Relaying Rails, subject to inspection	28.00 to 30.00
Frogs, Switches and Guards	17.75 to 18.25
Heavy Melting Steel	16.50 to 17.00
Mixed Country Steel	12.50 to 13.00

We quote net tons as follows:

N. 1 R. R. Wrought	$16.50 to 17.00
No. 2 R. R. Wrought	15.75 to 16.00
Knuckles, Couplers and Springs	17.25 to 17.75
Shafting	17.75 to 18.25
Dealers' Forge No. 1	13.50 to 13.75
Pipes and Flues	13.25 to 13.75
No. 1 Cast, 130 lbs. and less	19.25 to 19.75
No. 1 Mill	10.25 to 10.75
Mixed Busheling (Nos. 1 and 2)	12.25 to 12.75
Country sheet	9.25 to 9.50
No. 1 Boiler Cut	12.25 to 12.75
Boiler Punchings	15.50 to 16.00
Cast Borings	11.25 to 11.50
Mixed Borings, etc	11.25 to 11.50
Machine Shop Turnings	12.75 to 13.25
Railroad Malleable	17.75 to 18.25
Agricultural Malleable	16.00 to 16.50
Stove Plate and Light Cast Scrap	15.75 to 16.25
Old Iron Splice Bars	19.25 to 19.75

CLEVELAND.

Increased Tonnage Per Carload of Finished Material.—Pig Iron Very Quiet.

Office of THE IRON TRADE REVIEW, Browning Building, June 18.

Iron Ore.—Heavy shipments have been made from the Lake Superior ranges during the week, and vessels have obtained good dispatch from the lower lake ports. All indications are very favorable for a heavy movement for the month.

Pig Iron.—The market has been extremely quiet, with few sales and not a large number of inquiries. The new furnace at Erie, Pa., has been blown in and will have some spot iron to dispose of, although a considerable part of its product for future delivery has been sold. For delivery in the first half of 1908, $21.50 at the furnace seems to be the minimum. For last quarter delivery, $23 at the furnace has been slightly shaded. Foundries are urging deliveries, and seem to be very busy. We quote, f. o. b. Cleveland for last half delivery, as follows:

Bessemer	$23.90
No. 1 Foundry	24.50
No. 2 Foundry	24.00
No. 3 Foundry	23.50
No. 2 Southern	24.35
Gray Forge	22.50

Coke.—The improvement in foundry grades noted last week has been well maintained, but there is very little activity in furnace coke. We quote furnace coke at $2.15 to $2.25 for spot delivery, and $2.25 to $2.50 for last half. For last half delivery, foundry coke is selling at $3.15 to $3.25, although one important interest is still holding at $3.50.

Finished Material.—Effective July 1, the minimum car load of finished materials will be 18 instead of 15 tons as heretofore. Jobbers who have notified their customers of the change have usually received replies to increase orders, so as to obtain the carload price and carload freight rate. The latter is considerably higher for less than carload lots, as for example, between Pittsburg and Cleveland the advance effective June 1 was from 9½ to 10 cents on carload lots, and from 11 to 13 cents on less than carload lots. Many mills will close for repairs about July 1. It is not expected, however, that the suspension will last more than a couple of weeks in most cases. One Cleveland mill has reduced its price for plates from 2 cents to 1.90c, and the high premiums which have prevailed are not being insisted upon so firmly by some mills in cases of desirable business. Billets are easier and prices somewhat lower. Among the sales of the week, we note one of 200 tons of rails for a Texas traction line and about 2,000 tons of bridge material.

Old Material.—Less activity is shown in old material and in some grades prices have eased off. A drop of 50 cents per ton in old car wheels is noted and stove plate is somewhat lower, due to freer offerings. There is little buying on the part of mills and foundries, and the near prospect of summer shutdowns is lessening this demand still further. The Pennsylvania lines east have closed on their unusually large offering of 40,000 tons at fair prices. Tin scrap shows a drop of $3 a ton in the week and is now quoted at $16, net tons. We have revised our quotations, and quote, f. o. b. Cleveland, gross tons, as follows:

Old iron rails	$24.00 to 25.00
Old steel rails (re-rolling)	17.75 to 18.75
Old steel rails (under 6 feet)	17.50 to 18.50
Old car wheels	23.50 to 24.50
Steel boiler plate	14.50 to 15.50
Steel axles	22.00 to 23.00
Malleable iron (railroad)	19.00 to 19.25
Malleable iron (agricultural)	17.25 to 17.75
Heavy steel	16.75 to 17.25
Country mixed steel	15.25 to 15.75
Low phosphorus	21.50 to 22.50

We quote net tons as follows:

No. 1 R. R. wrought	$16.50 to 17.00
No. 1 busheling	14.50 to 15.00
No. 1 machine cast	18.75 to 19.25
Iron axles	26.00 to 26.50
Axle turnings	13.50 to 14.00
Machine shop turnings	12.50 to 13.00
Grate bars	15.00 to 15.50
Pipes and flues	14.00 to 15.00
Tank iron	12.50 to 13.50
Hoop and band iron	8.50 to 9.00
Sheet iron	7.50 to 8.50
Wrought drillings	12.50 to 13.00
Stove plate	14.50 to 15.00
Cast borings	10.75 to 11.25

CINCINNATI.

Pig Iron Quiet.—Considerable Activity in Coke With Occasionally Lower Prices.

June 18.

Pig Iron.—The market continues quiet with no material change in prices. There has been a slightly better call for spot iron with sales mainly at $21.50 Birmingham although occasionally $21.00 was done, and in a few instances $22.00 was obtained. Some resale iron is coming out, which has a tendency to make the offerings appear more liberal for third quarter and prompt shipment. On the other hand, some consumers have evidently received all the iron due them on their first half contracts and are running very low, waiting for shipments to commence on their last half purchases. It is believed in some quar-

ters that this situation may have a stimulating effect on spot iron from now until July shipments on last half contracts are in full swing. There is enough offering, however, just now for the limited demand to give credence to the claims of buyers that there will be sufficient iron for all such filling-in calls. Quotations for spot iron delivered Cincinnati are as follows:

Southern foundry No. 1	$25.25 to 25.75
Southern foundry No. 2	24.75 to 25.25
Southern foundry No. 3	24.25 to 24.75
Southern foundry No. 4	22.25 to 22.75
Southern No. 1 soft	25.25 to 25.75
Southern No. 2 soft	24.75 to 25.25
Southern gray forge	21.25 to 21.75
Northern No. 1 foundry	25.65 to 26.65
Northern No. 2 foundry	25.15 to 26.15
Northern No. 3 foundry	24.65 to 25.65

Third quarter delivery is quoted at $21.00 to $21.50 Birmingham with but little inquiry or trading. Last quarter is mainly quoted at $20.00 Birmingham, but $19.50 can be done and some furnaces are holding at prohibitive prices. There is not much northern iron on the market, but there is an occasional sale. One transaction covering 2,500 tons to a northern Ohio concern of No. 3, No. 4 and gray forge, third quarter delivery, was reported sold by a northern Ohio furnace. Another sale of 1,000 tons of malleable, deliveries September to December, to an Indiana melter was closed. A sale of southern gray forge covering 1,000 tons for third quarter delivery was made public. The lower grades are dull with hardly enough call for them to establish quotations. Spot No. 4 southern is quotable at $19.00 to $19.50 and gray forge at $18.00 to $18.50 Birmingham. Some gray forge for third quarter delivery has been offered at $18.50 Birmingham. Silvery 8 per cent is quoted at $30.00 at northern furnace.

For first half of 1908 there is not much doing and southern brands are quoted at $18.25 to $18.50 Birmingham and northern iron at $22.00 at furnace. We quote for last quarter delivery delivered Cincinnati as follows:

Southern Foundry No. 1	$23.25 to 23.75
Southern Foundry No. 2	22.75 to 23.25
Southern Foundry No. 3	22.25 to 22.75
Southern Foundry No. 4	21.75 to 22.25
Southern Foundry No. 1 soft	23.25 to 23.75
Southern Foundry No. 2 soft	22.75 to 23.25
Gray Forge	20.75 to 21.00
Northern foundry No. 1	24.65 to 25.15
Northern Foundry No. 2	24.15 to 24.65
Northern Foundry No. 3	23.65 to 24.15

Finished Material.—There is a fair inquiry in the finished lines and specifications on contracts are satisfactory. In a retail way there is an active demand and the market is active. Orders are filled here for less than carloads at the following prices:

Angles, 3 x 3 and over, 2.15c to 2.25c; beams and channels, 15 inches and under, 2.15c; small angles and architectural channels, 2.10c base; plates ¼ inch and heavier, 2.10c; 3-16 inch 2.20c; No. 8, 2.20c; sheets (blue annealed No. 10, 2.30c; No. 12, 2.35c; No. 14, 2.40c; No. 16, 2.50c; box annealed sheets, Nos. 18 and 20, 2.65c; Nos. 22 and 24, 2.75c; Nos. 25 and 26, 2.80c; No. 27, 2.85c; and No. 28, 2.95c. Iron and steel bars, 2.00c base; boiler tubes, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3.15c base; cold rolled shafting, 45 per cent off list; steel tire, 2.10c base.

Coke.—There is still considerable activity in the market, but some operations are taking business at the sacrifice of prices and the range in quotations is wider. Some of the best known brands are held rather firmly, but the irregularity in prices gives the market an easy appearance. Some good sized contracts have been placed for foundry coke this week and the ruling figure is $3.25 with prices ranging down to $2.90 and up to $3.50 and slightly higher on brands of established reputation. Furnace coke is quoted mainly at $2.50 as a minimum price, but $2.40 can be done in some districts. Quotations in the leading coke producing districts are as follows:

Wise County, Va., Furnace Coke, prompt shipment	$2.50 to 2.75 per ton
Wise County, Va., Foundry Coke	3.00 to 3.25 per ton
Pocahontas Furnace Coke, prompt shipment	2.50 to 2.75 per ton
Pocahontas Foundry Coke	2.90 to 3.00 per ton
Connellsville Furnace Coke, prompt shipment	2.50 to 2.65 per ton
Connellsville Foundry Coke	2.90 to 3.50 per ton
New River Foundry Coke, prompt shipment	3.00 to 3.50 per ton
New River Furnace Coke, contract	2.65 to 2.75 per ton

Old Material.—Dealers are maintaining prices fairly well and there is but little change in prices. We quote, f. o. b. Cincinnati, as follows:

Old No. 1 R. R. wrought net tons	$17.00 to 17.50
Cast machine and f'dy, net tons	19.25 to 19.75
Old iron rails, gross tons	24.50 to 25.50
Old steel rails, gross tons	18.25 to 19.25
Old short lengths, gross tons	18.00 to 19.00
Old iron axles, net tons	26.50 to 27.00
Heavy melting scrap, gross tons	22.00 to 22.50
Stove plate, net tons	15.50 to 16.00
Wrought turnings, net tons	13.00 to 14.00
Cast borings, net tons	11.50 to 12.00
Car wheels, gross tons	24.50 to 25.50

The Domhoff & Joyce Co., Cincinnati, will open an office in Chicago on July 1 for the sale of pig iron and coke. E. T. Connors will be manager of the Chicago office, which will be located in the Railway Exchange Building. Mr. Connors is now general sales agent of the Portsmouth Steel Co., Portsmouth, O.

The Acetylene Lamp Co., Westfield, Mass, is to transfer its business to Bridgeport, Conn. The machinery is now being transferred and operations will begin as soon as the new plant is equipped.

PHILADELPHIA.

Pig Iron Easier With Some Concessions on Spot Delivery.

June 18.

Pig Iron.—The easing up in market conditions is reflected in the gradual disappearance of the premiums for spot shipments that have prevailed for several months past. This is due not alone to the existing lull in buying, but also to the fact that a number of furnaces that refused to make advance sales to their full capacity now have some iron for sale, and it is no longer necessary for buyers to offer from $1 to $3 extra in order to get supplies urgently needed. With the easing up in demand, some furnaces have been willing to make concessions of 25 to 50 cents a ton for last half business, but this is by no means general, and under no circumstances can the market be called weak. Persistent efforts to break it by many consumers have signally failed, and it is still a question whether such buyers may not yet have to pay roundly for their policy of delay. Salesmen report that there are still many consumers who have not covered for the third quarter, and who are following a hand-to-mouth plan in buying. It is believed that purchases by such interests cannot be delayed beyond July 15, and that a period of activity will then succeed the present quiet. As so many furnaces have sold up their capacity for the third quarter, it is difficult to see how new demands can be met without a stiffening of prices, or at least their maintenance at the present level. The Milliken trouble has thrown some steel-making iron on the market, and this has undoubtedly assisted in causing the present lull. Last half prices continue to show a considerable range, and some slight changes, as follows:

No. 1X Foundry	$25.50 to 26.00
No. 2X Foundry	24.00 to 25.00
No. 2 Plain	23.50 to 24.00
Standard Gray Forge	22.25 to 22.75
Basic	23.00 to 24.00
Low Phosphorus	27.75 to 28.25

New Material.—There is a steady flow of orders, generally small, which serve to keep the mills busy; but the situation may be said to lack snap. This is characteristic of the summer season, and causes no uneasiness. Prices may be quoted as follows: Beams, channels and angles, according to specifications, 1.83½c to 2c; refined iron bars, 1.83½c to 1.88½c; steel bars, 1.78½c to 1.83½c; plates, 1.98½c to 2.03½c.

Old Material.—There has been no change in the scrap market, which remains in its quiescent state, without weakening. Prices, which show immaterial changes, follow:

Old steel rails	$19.50 to 20.00
No. 1 steel scrap	19.00 to 19.50
Old steel axles	22.50 to 23.00
Old iron axles	31.00 to 32.00
Old iron rails	27.00 to 28.00
Old car wheels	24.00 to 25.00
Choice scrap R. R. No. 1 wrought	20.00 to 20.50
No. 1 yard scrap	18.50 to 19.00
Machinery Scrap	21.50 to 22.00
Low phosphorus scrap	24.00 to 25.00
Wrought iron pipe	16.00 to 17.00
No. 1 forge fire scrap	17.00 to 17.50
No. 2 forge fire scrap, ordinary	11.50 to 12.00
Wrought turnings	17.00 to 17.50
Axle turnings, heavy	17.00 to 17.50
Cast borings	16.25 to 16.75
Stove plates	17.50 to 18.00

NEW YORK.

Spot Prices for Pig Not So High.—English Quotations Decline.—Scrap Improves.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., June 18.

Pig Iron.—The local market has experienced another week of extreme quiet, but continues to hold its normal strength, with the exception that the high differential between the prices of early delivery iron and that for more advanced shipment has largely disappeared. Foreign iron for later delivery is also lower in sympathy with the decline in the British market. The International Steam Pump Co. is inquiring for two lots of iron aggregating 3,500 tons for delivery running ten weeks from July 1. Of this iron 1,500 tons is rather high in silicon. There are quite a number of other inquiries in the market, but for only medium lots. A good many concerns apparently have underestimated their melt for the first half of the year and are now seeking anticipations on contracts beginning July 1 to tide them over. After that date it is probable that some iron contracted for by the Milliken interests will be available for shipment elsewhere, but as this plant was a large consumer of scrap, the pig iron tonnage released will not be important. One instance of reselling has developed during the week, but under conditions to indicate a strong, rather than a weakening market. An important railway supply concern found that it had on hands some 600 tons of charcoal iron for which it would have no need until late in the year. A selling house was notified and within an hour found a customer for the entire lot, whereupon the manufacturing interest decided to let only half the iron go. The British market is notably easier, No. 3 Middlesbrough opening the week at 56s. The continental movement, it is stated, is practically over and America is now the chief foreign purchaser. Stocks are down to lower figures than for a long time past, being 301,000 of No. 3 on June 8. The export movement to this country has now run about nine months and with cargoes chartered for delivery late into August will round out a full year of steady importing. The opinion is frequently expressed that on the level to which British iron has now come down another spurt of activity may be looked for, but even if the end is at hand, the movement has been of record-breaking length and proportions. For prompt lots No. 3 Middlesbrough is selling at $22 to $22.50 tidewater, but for futures there are reports that purchasers have done as well as $21.25. For July and later shipment eastern prices are on the basis of $24.25 to $24.75 tidewater for No. 2X. In the following quotations the higher figure is for prompt delivery:

Northern Foundry No. 1	$24.00 to 25.00
No. 2X Foundry	23.50 to 24.50
No. 2 Plain	23.00 to 24.00
No. 2 Southern Foundry	23.50 to 24.50
Basic	23.00 to 24.00

Finished Material.—The feature of the week in the east has been the closing down of two steel-making plants in the New York district, for the reason that, with structural materials at their present level, the high price of iron renders the manufacture of steel either unprofitable to the small plant or so nearly so as to make it advisable to devote attention to other departments—in these instances the bridge and structural shops—where the margin of profit is larger. The closing of these plants has already brought about the diversion of some little iron and the inquiring for small tonnages of plates and other materials; more extensive purchases will probably follow, as it is understood that in both cases the bridge shops will be operated steadily. In the way of new structural business contracts have been small during the week, though prospective business is extensive. Heavy lettings are shortly to be made for the steel required for subway extensions and for school buildings in New York, and San Francisco is experiencing a return of activity. The American Bridge Co. has taken 750 tons for bridge work on the Erie, 400 tons for a Pittsburg hospital, 200 tons for a telephone building in Newark, 600 tons for the improvements at the Vandergrift works of the American Sheet & Tin Plate Co., 575 tons for another bridge on the St. Paul extension, 600 tons for the Pennsylvania tunnels, 800 tons for the Buckeye Realty building, New York, and 1,200 tons for the Mills building at St. Louis. The Mt. Vernon Bridge Co. has taken 725 tons of materials for the Hocking Valley and a number of other smaller bridge contracts have been let. Competition for business continues exceedingly brisk. The report is current that certain of the Milliken contracts are to be relet.

In cast iron pipe there is the usual run of railroad work. In municipal work, Mineola, N. Y., is to award 300 tons about June 21 and Passaic, N. J., will award an aggregate of 3,500 tons a few days later. In other lines the situation manifests little change.

Angles, 3 to 6 inches x ¼ inch and heavier, 1.86c; beams, 3 to 15 inches, 1.86c; tees, 3 x ¼ and heavier, 1.91c; plates, carloads, tank, 1.96c; marine boiler, 2.26c; bar iron, 1.86c; soft steel bars, 1.76c; sheets, No. 28, black, 2.60c.

Old Material.—The scrap market is in a little better shape, following the sending out of the usual railway lists and the taking of the tonnages there offered at good figures. There is a better inquiry for steel scrap, including no large tonnages, however, the trading being of the hand-to-mouth sort, with occasional lots of 500 and 1,000 tons. We quote gross tons, New York delivery, as follows:

Old iron rails	$24.50 to 25.50
Old steel rails, long lengths	18.00 to 18.50
Old steel rails, short pieces	16.25 to 16.75
Relaying rails	28.00 to 29.00
Old car wheels	24.00 to 24.50
Old iron car axles	28.50 to 29.50
Old steel car axles	21.00 to 21.50
Heavy melting steel	16.75 to 17.25
No. 1 railroad wrought	18.00 to 18.50
Iron track scrap	17.00 to 17.50
Wrought pipe	14.00 to 14.50
Cast borings	14.00 to 14.50
Wrought turnings	14.75 to 15.25
Heavy cast scrap	18.75 to 19.25
Railroad malleable	17.00 to 18.00
Agricultural malleable	15.00 to 16.00
Stove plate	15.50 to 16.00
Grate bars	14.50 to 15.00

ST. LOUIS.

Pig Iron Firm, But Demand Has Decreased to Some Extent.

June 16.

Pig Iron.—The pig iron market is firm, but a slight falling off in the demand is reported as a result of foundrymen having bought for their requirements and furnace men having sold up their outputs. No. 2 iron is quoted at $22, f. o. b. Birmingham, for spot shipments; for July, August and September, at $21.50, and for the last quarter at $19.50 to $20. Quite a little has been bought for first quarter of 1908 at $18.50.

Our quotations, f. o. b. Birmingham, for spot delivery, to which the freight of $3.75 is to be added, follow:

No. 1 Southern	$22.50 to 23.00
No. 2 Southern	22.00 to 22.50
No. 3 Southern	21.50 to 22.00
No. 4 Southern	21.00 to 21.50

Coke.—Quotations for shipment from July 1 through the last half, and from July 1 throughout the year 1908, are $3.25 to $3.50 for 72-hour Connellsville, f. o. b. ovens.

The freight to East St. Louis is $2.80, and to St. Louis, $2.90. Virginia coke is quoted at $3.25 ovens for same shipment. The car supply is reported ample by coke and pig

iron men, but the scrap iron dealers assert that a deplorable shortage exists.

Scrap Iron.—The market is firm, inquiries are plentiful, and the feeling is good. Dealers report a car shortage, however. Our quotations are:

	GROSS TONS
Steel rails (less than 3 feet)	$17.50
Car wheels	25.00
Iron rails	24.50
Rerolling steel rails	18.00
Heavy melting steel	17.50
Country steel mixed	16.00
	NET TONS
No. 1 R. R. wrought	$17.50
No. 2 R. R. wrought	16.00
Iron splice bars and fish plates	19.00
Iron car axles	24.60
Steel car axles	19.50
Locomotive tires, smooth inside	15.50
Iron shaftings (3 to 6 inches)	19.00
Country wrought	15.00
Pipes and flues	13.00
Heavy machinery	17.50
R. R. cast (less than 300 pounds)	17.50
No. 1 Busheling	14.00
No. 2 Busheling	13.50
Boiler sheet and rings	13.00
R. R. cast borings (free of inferior quality)	10.50
R. R. wrought turnings	13.50
Machine shop turnings (free from brass)	12.50
Railroad malleable	16.50
Agricultural malleable	15.25
Cast stove plate	14.50

BIRMINGHAM, ALA.

Some Selling for Next Year's Delivery—Workingmen Ask Higher Wages.

June 17.

Without forcing the mart, Alabama manufacturers are selling iron quietly for delivery in the first half of the coming year. While not great, some little tonnage has been disposed of for delivery during the second quarter of the coming year, the quotation for the product being the same as that for the first three months of 1908, viz., $18.50 per ton No. 2 foundry. Spot iron is almost out of the question in this district, and third quarter delivery iron for this year is a rare article. Some few sales for delivery during the fourth quarter of the present year are still being made. The following quotations prevail: No. 2 foundry, basis: Third quarter, this year, $22.50; fourth quarter, this year, $21.50 per ton; first half of the coming year, $18.50. The railroads are giving the best transportation facilities enjoyed in this district in many months. The product is being handled about as fast as it is being manufactured, and there is no accumulated iron. The production shows but little improvement.

Cast iron pipe plants are working on full time. Soil pipe makers are doing well, though they report the demand a little quiet on account of labor troubles in the extreme west. One of the soil pipe plants in this district, and also stove foundries, are experiencing a little difficulty in labor troubles, a demand for higher wages having been made.

BUFFALO

Few Transactions in Pig Iron and No Change in Prices.

June 18.

Pig Iron.—The market continues to show firmness in prices of all grades of iron without change in price. The demand for the past week for iron for last quarter delivery has been light and selling has therefore been very limited. All reports indicate that consumers are well taken care of for the balance of the year. No big inquiries for pig tonnage have been noted for some time.

Several sales of foundry iron have been made, calling for delivery during the first quarter of the ensuing year. Only a small tonnage was placed. The output of the furnaces is moving out nicely and no complaints as to car shortage or delays of any account are heard.

Inquiry shows that no prompt iron is to be had at present, but some tonnage for early delivery was placed at high prices the past week. The tonnage so contracted was special iron which would not apply on regular orders. The only sale of any account was of about 100 tons which was placed at a figure between $25 and $26. This cleaned up all the spot which is likely to be available for the present. Furnaces are not quoting on any 1908 deliveries except upon request. There is much confidence in the stability of the market.

We quote for last quarter delivery as follows:

No. 1X Foundry	$23.75 to 24.00
No. 2X Foundry	23.00 to 23.50
No. 3 Foundry	22.75 to 23.00
No. 2 Plain	22.50 to 23.00
Malleable Bessemer	23.00 to 23.50
Gray Forge	22.00 to 22.50
Charcoal	27.00 to 27.50

BRITISH IRON MARKET.

American Report Causes Decline.—Pressure for Delivery is Strong.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 5.

There has been some fluctuation in the price of pig iron during the past week, but prices still rule high. Yesterday, there was decided weakness owing to a report of a reduction of about a dollar in the price of American northern iron. But there was a turnover of 40,000 tons, and a slight recovery at the close, leaving prices at exactly 60s ($14.68). But fluctuations of a couple of shillings in a day cause uneasiness and discourage business. The strong feature of the position is that makers are very well sold, and can afford to wait, especially as shipments already arranged for the next few days total as much as 33,000 tons. Inquiries from the continent also continue numerous, and there is every expectation that recent records will be maintained. The east coast hematite pig iron shows a good improvement, while in the Furness district makers will be glad to increase their output. The stocks of west coast hematite are now 30,685 tons, and there is a daily slight reduction. The tendency to speculate in pig iron causes some anxiety and uneasiness. Middlesbrough stocks are rapidly declining, yesterday's total being 315,582 tons. The month's clearances have reached the enormous total of 64,000 tons, but shipments have not quite equalled those of April, totalling 143,366 tons, against 163,115 tons for April. Taking the year, the clearances have been 175,080 tons, an increase of 55,882 tons on last year. Some slight increase has been made in the number of blast furnaces, but these cannot for a long time make any material difference to the output. There is little buying in the Birmingham district, requirements having been met, but there is much pressure for delivery.

METAL MARKET.

NEW YORK.

June 18.

Copper.—As has been the case for some time past, the market is still characterized by the absence of large consumers from the market, and the volume of business is accordingly far below the normal. The intention of large users of the metal evidently is to make no further purchases until stocks on hand are consumed, by which time they expect some producing interests will be offering concessions. Two weeks' exports from Atlantic ports have totaled about 8,750 tons. Quotations are largely nominal as follows: Lake, 24c to 25c; electrolytic, 22½c to 23c; casting, 21½c to 22c. London quotations are steady, the close for spot yesterday being £97 15s, and for futures £93 7s 6d.

Pig Tin.—Developments in the British market, where a practical corner on spot tin has been secured, have had the effect of reducing shipments to this country, and a stronger tone has resulted. For spot and June delivery we quote 41¾c to 42¼, with July offerings at 41c, and August at 40¼. London closed yesterday at £189 for spot, and £181 10s for futures, the former figure being near a £5 advance for the week.

Pig Lead.—With only a moderate demand, quotations are unchanged at

5.75c to 5.80c for June delivery, New York, and 5.65c St. Louis. Lighter shipments from Australia have strengthened the British market, the close of yesterday on soft Spanish being £20 10s.

Spelter.—In car lots spot is quotable at 6.50c New York, with June shipments at 6.40c. London closed yesterday at £24 10s.

Antimony.—Forcing of sales has had the effect of completing the demoralization of the market. For ordinary brands the quotation is 12c to 13c, but for Cookson's and Hallett's there is not enough of a market to make a quotation possible.

CHICAGO.

June 17.

The market during the week exhibited greater strength than for some time, due to the general drop of ¼ cent which occurred a week ago. The decline brought into the market many buyers who have been holding off and making only small purchases. The increased sales had the effect of checking the downward movement, except in the case of lead, which dropped an additional 1-5 cent. Other metals remained as last week.

Copper lake sold for 26c and, casting for 24c and 24½c. Sheet zinc was quoted at 8.60c La Salle in car lots of 100-pound casks. Spelter sold at 7¼c. Pig tin varied between 45¼c and 45½c. Lead desilverized dropped from 6.30c and 6.40c to 6.10c and 6.20c in 50-ton lots, and corroding from 7c and 7.10c to 6.80c and 7c. The price in car lots was 2½c per 100 pounds higher. Cookson's antimony remained at 24c and 25c, and other grades at 23c.

The second hand metal market continued dull, although trading in copper strengthened somewhat. Prices showed little change. Prices quoted by dealers were:

Copper wire, 18c to 19c; copper, heavy, 19c; copper bottoms, 17c to 17.50c; copper clips, 18c; red brass, heavy, 16.50c to 17c; yellow brass, heavy, 13.50c to 14c; red brass, borings, 14c to 15c; yellow brass, borings, 12.50c; light brass, 10.50c to 11c; zinc, 4.50c to 5c; pipe lead, 5c; tea lead, 4.50c to 4.75c; tin foil, 31c to 33c; pewter No. 1, 26.50c to 29c.

ST. LOUIS.

June 17.

Lead and Zinc.—The production of zinc ore for last week was purchased and shipped, and the demand was active. While the shipment was large, a portion of it represented advance purchases made during the previous week, the demand settling down easier toward the close of the week. The highest price for zinc was the same as the previous week—$51 per ton, and the assay basis continued at $46 to $48 per ton of 60 per cent zinc.

New concentrating mills started this month have raised the production 610 to 750 tons per week, giving a production of 350 to 400 tons in excess of what it was prior to the flood of May 13.

The flooded mines are being rapidly drained, and before the end of July the weekly output will approximate 6,400 tons. The length of time it will hold at this will partially depend upon the old mines holding their own.

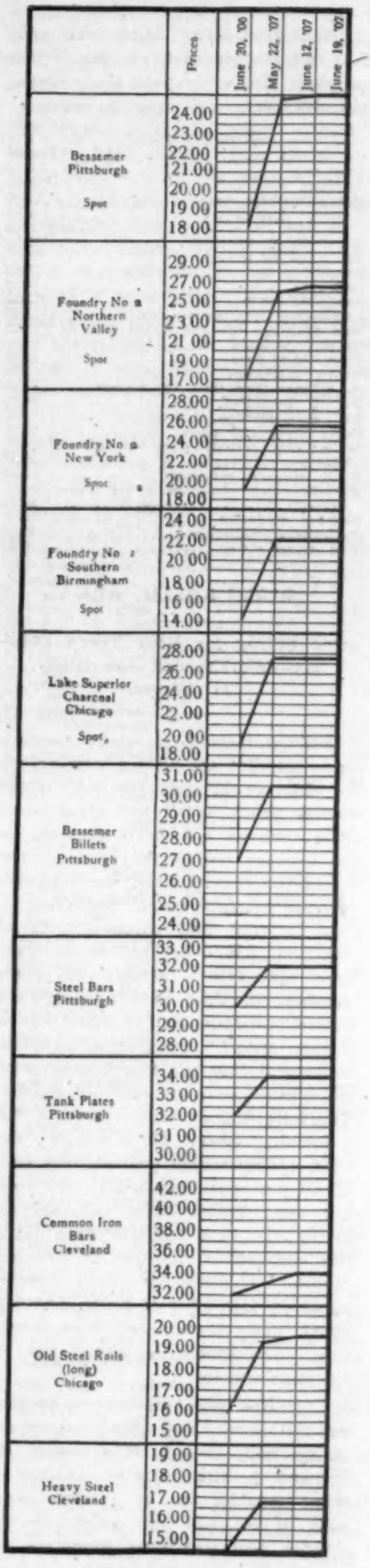
Lead was higher, and some sold lower than a week ago. A few choice bins commanded $78 per ton, while three of the purchasing companies cut the closing price to $72 and $73 per ton.

The shipment of this mineral was curtailed by some producers declining to accept the reduced price.

Preparing to Operate.—Michael Blake, of the firm of John Leonard & Co., 149 Broadway, New York, who with two associates recently purchased the properties of the Susquehanna Iron & Steel Co. at receiver's sale, announces that he has practically completed arrangements for the organization of a new company which will operate the properties. He is also busily engaged in organizing a capable staff to take charge of the various plants, which include two blast furnaces with a daily capacity of 100 tons each, three bar mills at Columbia, Pa., a large skelp mill and a pipe mill of 175 tons daily capacity. These were purchased as "running plants," with the exception of the furnaces which are now being placed in shape for operation. The properties represent an investment by Mr. Blake and his associates of almost $1,000,000, the purchase price being $410,000 for the plants, on some of which there was a mortgage for $300,000. In addition $150,000 was paid for raw and finished materials and mill supplies. The works are well located and modernly equipped.

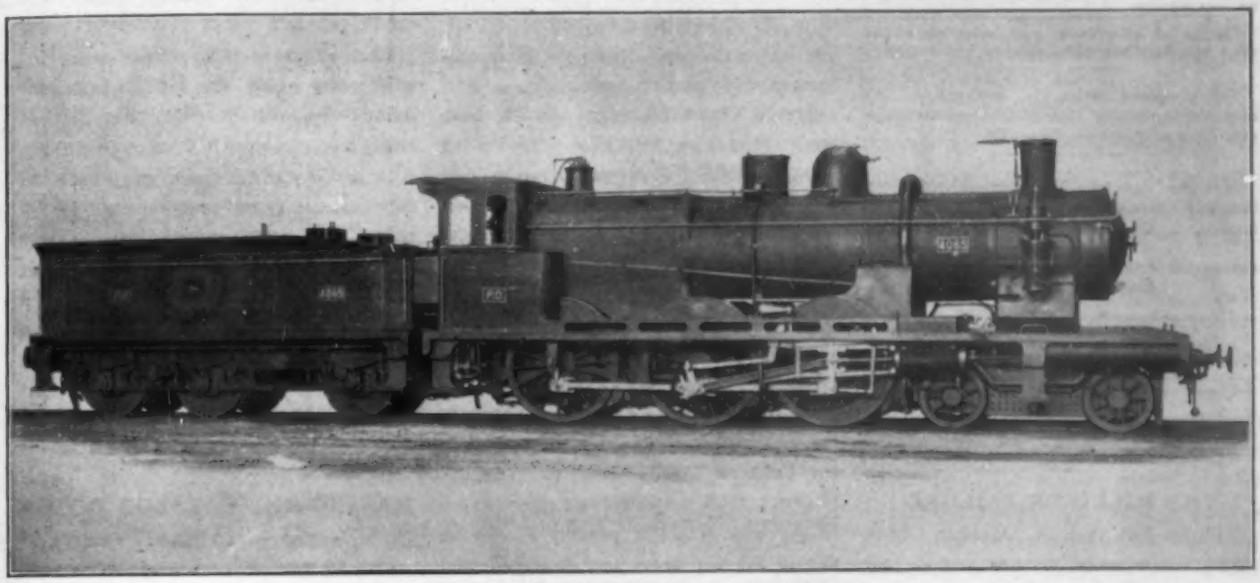
J. E. Snyder & Son, Worcester, Mass., builders of up-to-date drilling machines, have their new shop practically ready for ocupancy. The new plant will afford greatly increased facilities. At present they occupy rented quarters.

PRICE CHART.



A LOCOMOTIVE BUILT ON THE METRIC SYSTEM.

The accompanying illustration shows a De Glehn compound locomotive, one of an order of 20, recently built for the Paris-Orleans Railway of France by the Baldwin Locomotive Works, Philadelphia. The engines were built entirely from French drawings, exclusively, the dimensions being given entirely in the metric system, which was used throughout in their construction in the shop, necessitating the preparation of a large amount of special scales, templates and gages.



FOUR-CYLINDER DE GLEHN COMPOUND LOCOMOTIVE FOR PARIS-ORLEANS RAILWAY.

The engines are of the 10-wheel, 4-cylinder type, the high pressure cylinders being outside the frames and connected to the middle pair of drivers. The low pressure cylinders are located inside the frames and are connected to the leading pair of drivers, being set some distance in advance of the high pressure cylinders. The principal dimensions of the engines are as follows, all the dimensions being given in millimeters:

Gage	1,450.	
Cylinders	360	and 600 x 640.
Boiler, diameter	1,513.	
Sheets, thickness	185.	
Fire-box, length	3,043.	
Fire-box, width	1,000.	
Fire-box, depth front	2,100.	
Fire-box, depth back	1,470.	
Tubes, number	139.	
Tubes, diameter	70.	
Tubes, length	4,465.	
Driving wheels, diameter	1,850.	
Engine truck wheels, diameter	960.	
Wheel base, driving	4,200.	
Wheel base, rigid	4,200.	
Wheel base, total engine	8,250.	
Wheel base, total engine and tender	14,860.	
Weight on driving Wheel	110,000	pounds.
Total weight, engine	152,900	pounds.
Heating surface, fire-box	16,170	square millimeters.
Heating surface, tubes	223,230	square millimeters.
Heating surface, Total	239,400	square millimeters.
Grate area	34,100	square millimeters.

Limestone Company Elects.—The annual meeting of the Bessemer Limestone Co. was held at Youngstown, O., on Monday of this week. J. G. Butler Jr. was elected president; C. C. Blair, secretary; and Chas. M. Crook, secretary and general manager. The following directors were elected: Geo. Todd, Henry H. Stambaugh, J. G. Butler Jr., J. D. Dubois, C. R. Hubbard, and W. B. Schiller. This company has an annual output of 700,000 tons of flux stone and concrete, and a daily capacity of 100,000 shale brick, and is at work doubling its brick making plant. This will be completed Sept. 1. A specialty is made of paving block, and 40 miles of Cleveland streets have been paved with them.

HEAVY INQUIRIES FOR RAILS.

(Special Telegram.)

New York, June 19.—Several good inquiries for rails for this year's delivery are reported, indicating that railways are finding money more plentiful. The Kansas City Southern has engaged 10,000 tons from the leading interest for 1908.

British cables indicate a stronger iron market, No. 3 warrants opening today at 57 shillings.

Milliken receivers are in the market for a good tonnage of prompt structural shapes.

LARGE SURPLUS

Shown By Nine Months' Statement of Crucible Steel Co. of America.

A splendid record of profit for the nine months ending May 31, 1907, is presented by the official statement of the Crucible Steel Co. of America. A surplus of $882,093.90 is shown for that period. The statement of earnings is based on inventory values as of Aug. 31, 1906, for all finished material. Raw and process material is valued at cost to the company as of May 31, 1907. During March, the first month of the quarter covered by the appended statement, the principal works of the company at Pittsburg was shut down for 10 days on account of the flood. The company's official statement is as follows:

Net Earnings.

Total net earnings after deducting all expenditures for repairs, interest on mortgages, etc.		$2,022,180.00
Less amount set aside as reserve for contingencies		40,443.60
Balance of net earnings		$1,981,736.40
Dividends on preferred stock—		
No. 17—1½ per cent to Nov. 30, 1906	$366,547.50	
No. 18—1½ per cent to Feb. 28, 1907	366,547.50	
No. 19—1½ per cent to May 31, 1907	366,547.50	1,099,642.50
Surplus for the nine months		$ 882,093.90

To Build Ore Dock.—It is announced that the Duluth & Iron Range railroad will shortly begin the erection of a new ore dock at Two Harbors, Minn. The dock will be 940 feet long and will contain 142 pockets.

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THE MILLIKEN FAILURE.

Failures like that of Milliken Bros. create vastly more distrust outside the steel trade than they do within its ranks. The steel trade is a peculiar one, involving great risks considering the very large profits which are sometimes earned. No industry of similar magnitude can show such uncertainties of possible loss and possible profit. The iron and steel industry proper of the United States, including the stages of manufacture only through rolling operations, has an annual product which sells for well over one billion dollars. It has had signal successes, some enterprises occasionally earning their entire investment in two or three years, but it has also had its failures. These are forgotten in the general rapid growth of the industry. All over the eastern part of the country are landmarks which set forth failures, the memory of which has survived only locally. There have been removals to better locations which would not have been possible had not large profits been earned for a time; otherwise these too would have left only the record of failure.

The recent embarrassment of the new enterprise on Staten Island, New York, is of a type well known in the iron and steel trade. In this complicated business, with its rapidly changing conditions, an enterprise designed upon certain lines appears to promise large profits, but before the plans can be carried to the productive stage, conditions change and the expected profits are very largely reduced. This was the case in this instance. Here was a plant comprising basic open-hearth steel furnaces, blooming, billet and structural mills, designed to use purchased pig iron and to sell billets and structural shapes, both in mill form and fabricated, and to do a considerable export business. At the time the steel making enterprise was decided upon, in 1903, the prospects for making structural materials from purchased pig iron appeared extremely favorable. During that year, basic pig iron delivered Philadelphia dropped from $21 to $14, while No. 2 foundry pig, f. o. b. Birmingham, dropped from $20 to $9, and when the market was at the latter stage, some iron was even exported. Throughout 1903 structural shapes were kept on the basis of 1.60c, Pittsburg. The enterprise, then, contemplated the buying of pig iron at prices possibly as low as $13 to $15 per gross ton, delivered, and the selling of structural material on the basis of $34.90 per net ton, tidewater. On August 31, 1905, when the price of structural shapes was advanced from 1.60c to 1.70c, Pittsburg, basic pig iron could have been delivered at a price in the neighborhood of $16, for either northern or southern. Since then, structural material has not advanced, but southern basic pig iron has practically dropped out of the market, while northern at times could not be bought at as low as $24, delivered. As compared with the late part of 1903, there has been an advance of $10 a ton in pig iron, and only $2 in the finished product, while as compared with Sept. 1, 1905, there has been an advance of $8 a ton in pig iron, and none in shapes.

Doubtless it was fully contemplated that in time blast furnaces would be erected on Staten Island, when imported iron ore could be used, and this would have put the enterprise in a very favorable position. Probably it was felt that should the pig iron market tend in a direction unfavorable, in the long run, to the consumer, time would be afforded for the erection of blast furnaces. Instead, the change came suddenly, and before the steel plant itself had had an opportunity to make good profits.

What is most significant in the Milliken failure is that money could not be secured to carry on the enterprise, and put it, by the erection of blast furnaces, in an impregnable position. That this could not be done reflects unfavorable financial rather than unfavorable steel conditions.

There have been in recent years involvements where the fundamental conditions appeared favorable, but cost of erection and change in market conditions, with inability to borrow money, made the enterprise appear unpromising for a time. The most notable instance was that of the Clairton Steel Co. Its plant was well built and adequately provided with raw material, but in an untoward moment its owners disposed of it, its new owners finding it in a very short time one of its best built and most profitable operations.

MAKING THE CATALOG DO ITS SHARE.

One of the perplexing questions with which the present day selling organization has to deal is the abuse of the arrangements for the free distribution of its catalog. In many instances this publication is of such size and character, as regards typography and illustrations, that the cost of even a comparatively limited edition contributes an important part to the list of annual selling expenses, while that of each copy is in itself no small item. Manifestly the catalog is gotten out for circulation, and the more extensive this can be among the interested classes the better, but every year the sales manager is endeavoring to see to it that this is confined more and more rigidly to prospective and possible purchasers. In times gone by, a good many others have crept into the mailing lists.

Some of the abuses to which the old-time method of catalog distribution was and is still put are so flagrant as to be extremely annoying. The case in point is well illustrated by the experience of a large machinery and supply house which some time ago issued at a cost of perhaps $50,000 a limited edition of a

two-volume, encyclopedia size catalog listing its varied lines. In the main the recipients of this publication were of the class which it was aimed to reach. As always is the case, a few copies went to technical students, but the far-sighted sales manager knows that with these his literature is sure of careful inspection and that by thus stamping the name and products of his concern indelibly on the youthful mind he is building for the future.

But there is another class, chiefly made up of those who hear that the Blank Machine Co. has gotten out a catalog that is a pretty good thing in its way and write for it, not with any idea of using it for possible purchases, but "just to have it around, as it doesn't cost anything." Sometimes it turns out that this publication is the basis of orders, and it is not unusual for the purchaser to specify a certain machine "such as the Blank Machine Co. lists on page 321 of its last catalog,"—while the order goes to a rival concern.

When an instance of this kind comes to the attention of the sales manager, it is not to be wondered that he looks about in desperation for some check which will keep the undesirables off his lists. Apparently the most efficient remedy lies in the vigorous and systematic use of the follow-up letter. One letter will serve to acknowedge the receipt of the request for catalog, announce its shipment, inquire into the particular line of product sought and offer any further assistance in filling that inquiry. Such a letter will make it clear to the recipient that the catalog, so far as its publisher is concerned, is a plain business proposition. If it is at all practicable, a personal visit from a representative of the concern is of course desirable at this stage. This being impossible, however, in the absence of a reply from the inquirer, a brief, courteous letter, followed by others at judicious intervals, will either develop business or establish the fact that the trial is a blind one. In either instance the result is worth while, for the just-to-have-it-around man is not likely to be among those requesting copies of the next issue. There are ways and ways of checking up, of course, and a good many concerns have developed a well organized system to fit their individual needs, but certain it is that unless some such thorough course as this is followed the catalog has not been made to give its maximum of efficiency.

EVOLUTION IN STEEL MAKING.

There is no more reason to assume now that evolution in steel making has seen its perfect work than there has been at any time in the past. Conditions and necessities continue to change as they always have. Wrought iron produced direct from the ore succeeded to puddled iron, and puddled iron to mild steel. To an extent really dictated more by ore composition than by the demands of consumers basic open-hearth steel has grown more than Bessemer steel. Iron rails gave way to steel rails, and lower carbons have been giving place to higher carbons, with sections growing continually heavier.

Not along old, but rather along new lines, this evolution is destined to continue, and the difficulty of forecasting what may happen in the next quarter century utterly precludes the formation of an opinion as to whether the evolution will ever stop.

A parallel may be drawn between this evolution in the iron and steel world and that which has gone on in geological times. There have been times in the evolution of the natural world when conditions were especially propitious and the old and the new types throve together and the law of the survival of the fittest was temporarily in abeyance, because for the time all types survived. Then, as conditions became less favorable, the old were forced to yield to the newer types.

So it is in the steel world. Demand has been for all material which could be procured. It has been abnormally heavy. As it becomes less, in proportion to total capacity, there will be more natural selection and the fitter types will survive.

To meet the demands of the Bessemer steel works, pushed to their utmost capacity and being constantly improved and enlarged, it has been necessary to mine poorer and poorer ores, using them with the better material to produce a Bessemer mixture. To take only the ores best adapted to the process would have been to impoverish the mines. As open-hearth capacity increases relative to Bessemer, and the demand is less strenuous, a mixture somewhat lower in phosphorus can and must be used. With capacity for the production of steel in general enlarged, relative to demand, the last possible pound will not have to be rolled out of the ingots which are cast, and more liberal cropping can be indulged in, leaving sounder steel for the rolling. Various processes for the refining of steel and the limitation of segregation and piping can be put into use. Alloying is strictly in its infancy. Throughout all this evolution will run the great principle that the cost of making a ton of steel has greatly increased through the enhancement in value of raw materials, and it is necessary to make that ton of steel much better, so that it may do much more useful work than can be done by the ton of ordinary steel, to which the trade has been accustomed.

In the progress of this evolution, there is no occasion for scare heads and yellow journalism. What a time the yellow journals would have had in geological ages with the ichthyosaurus, the dinosaur, the diplocodus and other animals which in nature's own good time have given way to the turkey, the cow, and the other useful forms of life of the present day!

CAR PLANT PLANNED.

The American Car & Foundry Co., it is officially announced, is preparing plans for an extensive steel car plant to be located at Gary, Ind., where 170 acres of land has been purchased adjacent to the new works of the United States Steel Corporation. The intention is to make this plant a model in its line, where steel cars can be turned out more economically than at any plant now in operation. It will have a daily capacity of about 100 cars, and in addition to the economies resulting from its proximity to the Gary steel mills will be equipped in the most efficient way possible. No haste will be exercised in its construction, as it is not expected that the plant will be operated before the steel works adjoining are in a position to furnish the class of materials entering into steel cars. There will be no new capital obligations to provide the necessary funds, as the plant will be built entirely out of earnings. When completed, it will be the central plant of the company's holdings.

RAPID WORK

AT THE GREAT DOCKS AT THE HEAD OF THE LAKES.

Option Given the Rogers-Brown Ore Co.—Rumors of More Plants at Duluth.—Meeting of Lake Superior Mining Institute.

Office of THE IRON TRADE REVIEW,
411 Providence Bldg.
Duluth, June 17.

The past week has been one of splendid ore shipments, the Duluth dock, for example, shipping in six days 527,589 tons. This compares with 405,607 tons a year ago, over 100,000 tons less. From Two Harbors there was shipped 301,493 tons as against 285,147 tons in 1906 and from Superior the shipment was 278,488 tons as compared with 222,760 tons a year ago. This shows an aggregate movement from the head of the lakes for the week of 1,107,570 tons or 194,056 tons more than was shipped from the same three ports in 1906. This brings the total for the year from the head of the lakes up to 6,610,284 as compared with 5,466,821 in 1906.

The Missabe dock shipments are truly remarkable. Handling ore at the rate of almost 90,000 tons a day, some days more than that, having only three docks for service and with the problem of properly mixing the ores continually on their hands, they are, without intending to compare with any other docks, making a wonderful record. Marquette range shipments are being cut down because of labor troubles both in the scarcity of men at the mines and because of strikes on the docks. The strike on the D. S. S. & A. will not probably be of long duration.

Despite the frequently recurring expressions regarding the possibility of a tonnage tax on ore in Minnesota, it should be understood that no legislation is possible in that direction for at least two years, the matter having been settled for the present session. A tax commission considering the valuation of iron ore properties is about to undertake a trip on the range. It is probable that the mining companies will be asked to submit to a larger assessed valuation.

The Rogers-Brown Ore Co. has been given a twelve months' option on two forties on the Cuyuna range explored by the Orelands Co. The property is in Section 30, 46, 28 and it is claimed contains in the neighborhood of 2,000,000 tons of ore. As stated the option is for lease or sale, the purchase price to be $250,000 or the royalty 25 and 30 cents per ton as the ore is below or above 60 per cent. While the cost of the option is not known, the length of its term, though unusually long, is none too great.

There seems to be an excellent foundation for the belief though there is no authoritative confirmation that the steel plant of the U. S. Steel Corporation will not be the only new plant to be erected at Duluth. Indications point to the establishment of district plants of such concerns as the Pressed Steel Car Co., Pittsburg, the American Car & Foundry Co., St. Louis and one of the large locomotive builders and reports have been very current as to this immediate probability.

Secretary Yungbluth of the Lake Superior Mining Institute has issued the first announcement setting the date for the 1907 meeting on the Mesabi range, headquarters at Duluth. The session will begin on Wednesday, July 24 and continue through the 27th. Plans concerning transportation, program and arrangements are now being developed by the committees in charge and will soon be ready for announcement. Attention is called to the paper to be presented by John H. Hearding, of Eveleth, Minn., on biographies of the Lake Superior district, asking that information concerning the subjects of the paper be contributed.

VIENNA MEETING OF THE IRON AND STEEL INSTITUTE.

The itinerary for the Vienna meeting of the Iron and Steel Institute has been announced, and is as follows:

Tuesday, Sept. 17, leave London for Laon, luncheon at Calais, dinner at Laon; leave Laon Tuesday evening.

Wednesday, Sept. 18, arrive at Zurich in the morning, spending the day in that city.

Thursday, Sept. 19, leave Zurich for Insbruck, arriving there in the evening. The whole of Friday, Sept. 20, will be spent at Insbruck, time being available for visiting works of art, palaces, etc., and for taking local trips to the points of interest. Saturday, Sept. 21, leave Insbruck for Vienna.

Sunday, Sept. 22-29, will be spent in Vienna, Sept. 23, 24 and 25 being devoted to the meeting and Sept. 26, 27 and 28 to long excursions.

Sunday, Sept. 29, leave Vienna for Salzburg, arriving at the latter place in the late afternoon and spending the night there. Monday, Sept. 30, leave Salzburg for Basle, where the society will spend the night.

Tuesday, Oct. 1, leave Basle for Ostend, arriving at London on Wednesday, Oct. 2.

The professional program of the meeting, which is to be held in Vienna, is as follows:

On Monday, Sept. 23, the president, council and members of the Iron and Steel Institute will be welcomed by the reception committee, by the government and civic authorities and by the president of the Society of Engineers and Architects, at whose headquarters the meeting will be held. A selection of papers will subsequently be read and discussed. Monday afternoon, the members and ladies accompanying them will be taken for a drive through Vienna and in the Prater, visiting the Municipal Museum and the Town Hall, where they will be received by the lord mayor of Vienna. In the evening, a special performance at the Imperial Opera House will be arranged.

On Tuesday, Sept. 24, the morning will be devoted to the reading and discussion of papers, and the afternoon to a visit in the Imperial palace at Schonbrunn.

On Wednesday, Sept. 25, the entire day will be devoted to an excursion to the Hoch Schneeberg, luncheon being served at the Hoch-Schneeberg hotel. In the evening, members and ladies will be invited to a banquet at the hall of the musical society. At this and at all other functions, including the visit to the opera house, the members and ladies will be the guests of the Austrian Iron Works.

On Thursday, Sept. 26, a party (limited to 150) will be conveyed to Prague by special train, where the afternoon will be devoted alternatively to visits to objects of interest in Prague, or to a visit to the works of the Bohmische Montangesellschaft at Konigshof. In the evening, the party will be invited to a performance at the Czechish Opera and Friday, Sept. 27, the works at Kladno will be visited, the party returning to Prague in the afternoon. Those desiring to go on the excursion to Styria will leave Vienna by special train on Thursday, Sept. 26, for the Semmering, proceeding next morning to the Donawitz Works. The Erzberg iron ore mines will be visited in the afternoon, the party returning to Vienna that evening. The excursion to Moravia and Silesia will leave Vienna on Sept. 26 by special train, reaching Witkowitz at noon, in the afternoon visiting the Witkowitz Works and leaving on Friday morning for Trzywitz, where the electrically-driven reversing rolling mill will be visited.

LATEST REPORT

Is That San Francisco Machinists Will Return to Work.—The Settlement—Labor News.

(Special Telegram.)

San Francisco, June 18.—The machinists of San Francisco and vicinity have at last come to the conclusion to return to work upon the terms and conditions offered by the employers, and return at once. When the ballot was counted, it was found that the agreement offered by the California Metal Trades Association, which had been twice rejected within the last two weeks by the same people, was ratified by a safe majority. This will furnish employment to 10,000 workmen at once, and to as many more within the next few weeks. They return to work, after weeks of idleness, under the same terms and conditions for which they struck and lost prospective earnings since May 1. They had been offered an increase of ten per cent in wages before they struck, but the offer was spurned. Now they have forfeited the 10 per cent advance, and all they have accomplished is a reduction of working hours, at the rate of fifteen minutes at a time, commencing eighteen months hence, and fifteen minutes reduction one year later, and then fifteen minutes again after six months until the eight-hour day shall be reached in three years from now.

Many Strikes in Progress.

At the present time the National Metal Trades Association reports that it is combating strikes in the plants of about 75 of its members. It is reported that conditions in these strikes at the present time indicate settlements in the near future satisfactory to the association. Machinists are out in the following plants:

Pittsburg—Chaplin-Fulton Mfg. Co., Fawcus Machine Co., Heyl & Patterson, Inc., McIntosh, Hemphill & Co., Mesta Machine Co., United Engineering & Foundry Co. (McGill Dept.), United Engineering & Foundry Co. (Frank Kneeland Dept.), Union Foundry & Machine Co., Wilson, Snyder & Co., H. P. Gazzam Machine Co., Thomas Carlin's Sons Co.

St. Louis—Barry-Wehmiller Machine Co., Essmueller Mill Furnishing Co., Fernholtz Brick Machine Co., George F. Fritz Foundry & Machine Co., Hall & Brown Woodworking Machine Co., Hydraulic Press Brick Co., Kupferle Bros. Mfg. Co., A. Leschen & Sons Rope Co., Medart Patent Pulley Co., Materne Mfg. Co., Reliance Machine & Tool Co., Rueter-Jones Mfg. Co., St. Louis Iron & Machine Works, Wagner Electric Mfg. Co., Whitman Agricultural Co., Williams Patent Crusher & Pulverizer Co., Yerkes & Finan Machine Co.

Moline, Ill.—Williams, White & Co., Root & Van Dervoort Engineering Co.

Franklin, Pa.—Colburn Machine Tool Co., Chicago Pneumatic Tool Co.

Chicago—Allis-Chalmers Co.

Westfield, Mass.—Pope Mfg. Co.

Minneapolis—Diamond Iron Works Co.

Cleveland—American Machine & Mfg. Co., Avery Stamping Co., American Ball Bearing Co., V. D. Anderson Co., Atlas Bolt & Screw Co., Baker Motor Vehicle Co., Bruce-Merriam-Abbott Co., Cleveland Hardware Co., Cleveland City Forge & Iron Co., Cleveland Punch & Shear Co., Chase Machine Co., Ferro Machine & Foundry Co., Foote-Burt Co., Garford Co., Hill Clutch Co., Hydraulic Pressed Steel Co., Long Arm System Co., Lord, Bowler & Co., Macbeth Iron Co., McMyler Mfg. Co., National Screw & Tack Co., National-Acme Mfg. Co., John S. Oram, Parish & Bingham Co., Rauch & Lang Carriage Co., Royal Motor Car Co., Variety Iron Works Co., F. B. Stearns Co.

In other crafts the association is fighting strikes in the shops of the following members: Kraushaar Brass Mfg. Co., St. Louis; E. Gilbert & Sons Co., St. Louis; Quintard Iron Works Co., New York; New Jersey Dry Dock & Transportation Co., New York.

Union Weakness Disclosed.

Birmingham, Ala., June 17.—Union labor has been put to several tests recently and the results do not show up favorably for the organizations. Recently the Louisville & Nashville railroad dismissed a number of machinists at its Decatur shops and a general strike was ordered at all shops of the L. & N. by the union men. The railroad is caring for the work in the shops right along, new men having been brought in. Recently an organizer of the street railway employes' union came to Birmingham and started a union. The local street company declined to recognize the union and discharged all men who had joined the union. Then the labor organizations of the district held a couple of mass meetings, which were well attended and a general sympathetic strike was ordered in case the street railway company did not recognize the union. The president of the street railway company remained pat and the strike was ordered. Less than 900 men responded to the call and the strike was declared off the next day. The report of the secretary of the district organization of the United Mine Workers of America for the past year shows a membership of something over 3,000 against 11,000 before the strike in 1904. The loss is accounted for by the secretary of the union in the fact that during the two years' strike the men out were not required to pay any dues. Since the strike, these men, says the secretary, have not been reinstated and are not counted on the membership rolls.

Labor Notes.

A strike has been called on the plant of Kling Bros., boiler manufacturers, Chicago, by about 25 machinists.

At the Chicago office of the National Metal Trades Association it is announced that the Allis-Chalmers Co. strike in that city has practically ended. The places of the striking machinists have been filled by the association and the plant is working full force.

The convention of the Iron Molders' Union of North America, to be held in Philadelphia next month, will be composed of 531 delegates exclusive of officers. At the Toronto convention in 1902, there were 518 delegates, and at that time the basis of representation was reduced by half in order that there would not be so many delegates at the next meeting, but in spite of that fact, 531 delegates will be entitled to seats.

FOUNDRYMEN ENTERTAINED.

The regular monthly meeting of the New England Foundrymen's Association was held at the Exchange Club, Boston, on Wednesday evening, June 12. Dinner was served at six o'clock, after which the meeting was called to order by President Wm. H. Bense. It was voted that all business be dispensed with in order that the evening might be devoted to the entertainment.

The committee on arrangements provided an unusually snappy program which was altogether different from anything ever given by the Association. Prof. Howard of Boston presented his Vioscope, or moving picture entertainment, interspersed with illustrated songs. The pictures shown upon the screen were received with much favor and during the evening the members joined in the singing of all the popular songs. Enthusiasm ran high.

Announcement was made that the next meeting of the association would be held in the way of an outing, probably at Point Shirley Club, Winthrop, and it is hoped there will be a large attendance of members and their friends.

DEATH OF EDWARD MAHER.

Edward Maher, of the firm of Maher & Flockhart, Newark, N. J., and one of the best known foundrymen of the east, died at his home in Newark, June 15, of septic poisoning. He had been ill for only about ten days. Mr. Maher was born in Ireland, Aug. 10, 1852, and was brought to America by his parents two years later. While still a young man he learned the iron molding trade and eventually started in business for himself in Newark, though in such a modest way that, it is told, he himself delivered his castings about the city in a wheelbarrow. In 1882 he became a partner in the firm of Maher, Robinson & Flockhart, this name later being changed to Maher & Flockhart. The business prospered and has become one of the most important of

EDWARD MAHER.

its kind in New Jersey. Mr. Maher was one of the twelve men present at the meeting in New York when the National Founders' Association was formed. In this organization, as well as in the American Foundrymen's Association, he was always prominent, being a regular attendant at all conventions. He was repeatedly honored by his fellow citizens by election to positions of trust, serving four consecutive terms as a member of the Newark board of education and resigning in 1888 to accept the appointment of police commissioner, in which capacity he was chosen president of the board. He was also a member of the state board of education, vice president of the Newark board of trade and a generous supporter of numerous religious and charitable organizations with which he was closely identified. He is survived by a widow and three children.

OBITUARIES.

Augustus Trump, for eight years secretary and treasurer of the Pittsburg Steel Foundry Co., Pittsburg, died suddenly June 11 at his home in that city, aged 62. For six years previous to becoming connected with the Pittsburg Steel Foundry Co., Mr. Trump was identified with the Pittsburg Steel Casting Co.

Enoch R. Morse, inventor of the Morse concealed dial and one of the best known safe and vault men in the country, died at his home in East Somerville, Mass., June 12. He was born in 1822 and entered the safe business when 17 years old. He established a business for himself in 1844, under the name of E. R. Morse; in 1872 he enlarged his enterprise and went under the name of E. R. Morse & Co. Eighteen years ago he organized and incorporated the E. R. Morse Safe Co. William J. Syle, for sixteen years superintendent for Mr. Morse, became head of the firm 10 years ago, when the latter retired from active business.

PERSONALS.

Thomas Devlin, of Philadelphia, sailed for Europe last week.

M. C. Armour, of Rogers, Brown & Co., Chicago, has gone on a European trip.

Otis H. Cutler, president of the American Brake Shoe & Foundry Co., is in Europe.

D. B. Meachem, of Rogers, Brown & Co., Cincinnati, sailed for a three months' European trip this week.

H. S. Taylor has been added to the board of directors of the Michigan Malleable Iron Co., Detroit.

B. A. Wallingford, of Walter Wallingford & Co., Cincinnati, has just returned from a two months' European trip.

John Fritz was given the honorary degree of doctor of science at the annual commencement of Stevens Institute of Technology on June 13.

M. J. Eggan, assistant superintendent of the Sylvan plant of the Republic Iron & Steel Co., Moline, Ill., has tendered his resignation.

S. W. Croxton, of the Cleveland Furnace Co., of Cleveland, accompanied by members of his family, sailed for Europe June 8, where he will remain three or four months.

W. E. Richmond, treasurer of the American Emery Wheel Co., Providence, R. I., has sailed for Europe where he will spend about three months on a pleasure tour.

Charles H. Wheeler, formerly general superintendent of the Belfont Furnace Co., Ironton, O., has become associated with the Jackson Iron & Steel Co., Jackson, O., as general manager.

E. H. Willmarth, graduate of the Worcester Polytechnic Institute, has received the appointment as superintendent of shops at the Rose Polytechnic Institute, Terre Haute, Ind., for the coming year.

John I. Williams, for a number of years superintendent of the Brown-Bonnell works of the Republic Iron & Steel Co., Youngstown, and a well-known iron manufacturer, is seriously ill at his home in that city.

Leon P. Feustman has been elected first vice president to succeed Marcus Stine and Nathan Fleischer has been chosen treasurer to succeed Max Nathan, of the International Steam Pump Co. Messrs. Fleischer and Feustman are also newly elected directors of the company. Mr. Feustman is president of the Power & Mining Machinery Co.

August Heckscher has been elected president of the Central Foundry Co., 116 Nassau St., New York, having heretofore been a member of the directorate. William H. Remick has been added to the board.

E. B. Blandy, manager of sales in New York for the Republic Iron & Steel Co., and the Tennessee Coal, Iron & Railroad Co., sailed Wednesday for a brief recreation trip to Savannah and other southern points.

William Edenborn, a director of the United States Steel Corporation, and closely identified with southern railway interests, has been elected president of the Sheffield Coal & Iron Co., Sheffield, Ala. Mr. Edenborn was formerly president and treasurer of this concern, but about three years ago retired from the former position and Leonard Peckitt was chosen. Mr. Peckitt now retires from the presidency and from the directory board, finding his time fully occupied with his duties as president of the Empire Steel & Iron Co. It is stated that the operating headquarters of the Sheffield company will hereafter be located at Sheffield.

Will Build Furnace.—The contract for the erection of a new blast furnace at Ironton for the Ironton Iron Co., a recently-organized corporation, has been awarded to the Meehan Boiler & Construction Co., Lowellville, O. The new stack will be 18 x 75 feet and will be equipped with three Foote hot blast stoves 20 x 85. Its capacity will be 300 tons of malleable, Bessemer or foundry iron in 24 hours. Charles Peters has been selected as furnace superintendent.

NEW SMELTING PROCESS.

Much Interest Awakened by an Australian Invention.

Consul O. H. Baker, of Sydney, Australia, forwards a supplemental report on the Moore-Heskett process of producing iron and steel from ore without reduction to pig iron. He states:

My preliminary report, in Daily Consular and Trade Reports of Jan. 29, concerning the new smelting method, awakened a very great interest throughout the United States, as I have received numerous letters asking for further particulars explaining the process.

In a communication from the manager of the company I am informed that a demonstration of the process is being carried out on commercial lines in the presence of and under the direct supervision of six experts, including the consulting engineer to the Queensland government. It is claimed that these experts saw the furnaces empty, had the ore for treatment prepared under their supervision, and the furnace started in their presence, one of them remaining at the works to supervise operations throughout the whole run.

Saving Effected—Result of Test.

Mr. Henry C. Stanley, consulting engineer to the Queensland government, who visited the plant for the purpose of demonstrating the success of the patent, says:

I spent some time in examining the plant in question and watching the process in actual operation and am satisfied that it attains the object claimed for it by the inventors. The plant having been erected for experimental purposes is, of course, on a comparatively small scale, but I am informed that it is capable of turning out 10 tons of malleable iron or steel per diem. This being the case it would seem to be of sufficient size to test the practical value of the process, and might therefore be applied to a plant of any desired capacity with equally satisfactory results.

At the time of my visit the ore being treated was some of the New Zealand magnetic iron sand, but the inventors assert that it is effective in treating any ferruginous ore, provided the same is pulverized in the first place—an operation which can be readily done by mechanical means at small cost. It is unnecessary for me to recapitulate in detail the different steps of the process, but I was satisfied from what I observed that iron and steel can be made by it in an economical manner and of the best quality.

I had no opportunity of verifying the figures given as to saving in first cost of the plant and the comparatively small amount of labor necessary to operate it, but I see no reason to question their correctness. The economy in first cost of installing the machinery, which is stated to be only one-fourth that required by the present method of smelting, as well as the 25 per cent saving in operating expenses, should lead to its general adoption and result in the financial success of the company. With regard to the quality of steel produced, I may say that when recently in Brisbane, I was enabled, through the courtesy of the chief engineer of the Queensland railways, to test a bar of mild steel in the testing laboratory attached to his department. The tests gave most excellent results and were quite equal to the requirements of the standard specification for steel used in bridge girders and for other structural purposes. The tests were as follows: Tensile strength, 32.78 tons per square inch; elongation in length of 8 inches, 30 per cent; contraction in area, 50 per cent; and apparent limit of elasticity, 20.79 tons.

Conclusion of a Mechanical Engineer.

Mr. W. H. C. Lovely, a mechanical engineer of Sydney, says that he visited Melbourne and examined the Moore-Heskett process in operation, and went very carefully into the whole affair from every point of view, and arrived at the following conclusions:

Wrought iron and steel can be made in the manner claimed. I have seen it done, and the products are of the very best quality. The working cost would be less than by the old process for the following reasons: By treating pure granulated iron ore separated from the gangue (impurity) magnetically, the high cost of melting and fluxing the gangue is saved, viz. cost of fluxes, fuel, time and capacity of plant. This saving would vary with the grade of the particular ore used for comparison, but would generally be very large. Where deposits of ore exist already in a granulated state, as in the beach sands of New Zealand, no crushing would be required, and the saving, therefore, would be greater still. The old process can not adopt this method of purifying the ore without the large added cost of briquetting. By saving of fuel in continuous treatment where no remelting is required—once the metal is brought to the necessary temperature it is not cooled till it reaches the final stage of the finished product, and consequently no heat is wasted by any intermediate coolings.

The gas used in the present plant is obtained from oil, but coal-producing gas should do equally well and would be cheaper. The iron industry is one of the greatest in the world, and the vast possibilities before this new process, which has such advantages over the old process, can hardly be realized.

NEW STRUCTURAL PLANT OF COWING ENGINEERING CO.

Planned and built with the idea constantly in view of handling and finishing material in the most economical fashion, the new plant of the Cowing Engineering Co., Cleveland, at Collinwood, near that city, is rapidly nearing completion. Located on a tract of 12 acres adjoining the Nickel Plate railroad, five buildings are now in the process of construction, which, when completed, will constitute a plant with a capacity of producing annually between 36,000 and 40,000 tons of structural steel for buildings and bridges. One of these buildings will be a double structure 200 x 450 feet and another 100 x 450 feet, of steel and brick, with concrete foundation and structural steel frame work and they will be modernly equipped as structural shops. In addition there will be a template shop 60 x 100 feet, two stories, and an office and drafting building 40 x 60 feet, two stories. The first floor of the latter structure will be devoted to the offices, while the upper floor will be utilized as a drafting room, containing 35 work tables.

The plan of operation is that after being conveyed from the railroad cars to the company's industrial cars by means of a 20-ton electric traveling crane, the material enters the front of the plant in the raw state and emerges from the rear as a finished product. This will then be handled by a 40-ton electric traveling crane and again conveyed to the railroad cars for transportation. The latest improved machinery which will be installed in the shops and the double-track industrial railway which will run between the buildings will facilitate this operation.

The plant is expected to be completed and in operation the latter part of July, and when in running order will represent an investment of $500,000. The Cowing Engineering Co. is now operating a small plant on Dorh and Collins avenues, near the Lake Shore railroad, Cleveland. It is engaged at present in erecting the Hippodrome building, Cleveland, and has a $260,000 bridge contract for the Chicago & Alton railroad. One of its recent contracts has been the construction of its patent lift bridge at Jefferson street, Cleveland. The officers of the company are: J. P. Cowing, president; David Morison, first vice president; J. E. Nolan, second vice president and treasurer; William J. Mitchell, secretary, and James A. Joyce, chief engineer.

The new site of the company is part of a plot of 165 acres lying between the Lake Shore and the Nickel Plate railroads and owned by the Manufacturers' Realty Co. Arrangements have been made with the Lake Shore for the construction of a double track extending south and connecting with the Nickel Plate, thus affording excellent transportation facilities through the section, which will be devoted entirely to manufacturing purposes.

OPTIMISM PREVAILS

Among New York Machinery Men in Spite of Slight Decrease in Orders.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St.,
New York, June 18.

While it is undoubtedly true that the past few weeks have witnessed some slight easing up in the demand for machinery, local houses are inclined to be optimistic over the outlook and insist that, with the volume of orders now on their books, there is no occasion for anxiety. The absence of large railway inquiries has been a subject of frequent comment, but the opinion prevails that the heavy purchasing of steel cars and locomotives during the last fortnight will have a stimulating effect and will result in the placing of orders for further shop equipment by the leading lines and supply manufacturers. Deliveries are somewhat improved, this being explained in part by the fact that manufacturing concerns generally have increased their facilities during the last year, and in part by the fact that the extremely long delays before shipments can be made have exercised a deterrent effect in the placing of orders. Owing to the admitted inaccuracy of early crop reports, the tendency is to take with a grain of salt the unfavorable stories so far circulated, though their influence is noticed to some extent in the slowness with which certain eastern interests are closing on inquiries.

Interest during the past week has centered largely on the meetings at Atlantic City of the Railway Master Mechanics' and the Master Car Builders' associations, where an extensive exhibit of machine tools and other railway supplies has been visited by a large and interested crowd of spectators. New York machinery houses have been practically deserted, the selling force largely spending the week at Atlantic City. No further important railway lists are announced.

Following the destruction by fire of the Mt. Hope warehouse on the Isthmus, there has been extensive buying by Panama Canal authorities. In this warehouse were stored the miscellaneous supplies for a large part of the canal route, and a considerable quantity of small tools was lost in the fire. The awards on two large steam dredges and various other equipment will be announced shortly. The demand for canal equipment of late, while calling for no particularly large lots, has been remarkably steady.

The Rushmore Dynamo Works, Plainfield, N. J., has let contracts and is breaking ground for a new factory and power house. The main building will be 50 x 250 feet, two stories, and will be devoted exclusively to the manufacture of lighting apparatus and generators. The upper floors will accommodate the offices and lens grinding department, and the lower floor the stamping and drawing presses and other machine tool equipment. The plans call for the final erection of two wings, each 50 feet long and two stories high. The entire new plant will have a total floor space of 85,000 square feet. All machines will be electrically driven on the group system, except in the case of a few of the heavier tools, which will be provided with individual drive. A separate power house, 50 x 50 feet, will be equipped with a two-cylinder 200-horsepower Koerting producer gas engine with direct-connected dynamo. A similar gas engine unit of 75-horsepower will also be installed to provide for emergencies and to take up the overload and arrangements are made for the later installation of another 200-horse power gas engine. Two gas producers are to be provided and a 10-ton electric crane will span the engine room. Plans also provide for a complete brass foundry, 50 x 50 feet, of reinforced concrete. The total cost of these improvements will be about $100,000.

The American Emery Wheel Co., Providence, R. I., has just completed an extensive addition to its plant, thereby greatly increasing its facilities for the manufacture of emery wheels.

The Corbin Motor Vehicle Co. is at work on the foundations for a 5-story addition to its plant at Elm and Chestnut streets, New Britain, Conn.

The Bradley Contracting Co., of this city, presented the lowest bids for the construction of the three remaining sections of the subway loop at the Manhattan end of the Brooklyn bridge. Including the building of pipe galleries, the bids of this company for the work totaled $3,849,606, or within $100,000 of the estimates of the chief engineer, and the contracts were awarded accordingly. The carrying out of this work will necessitate the purchase of almost 5,000 tons of structural shapes and a considerable quantity of bars will be required for concrete reinforcing. The Rapid Transit Commission has also directed other important additions to the subway. To relieve present congestion, a third track will be added to the section from Ninety-sixth to 103rd streets, at a cost of about $850,000, and the ventilating system now in use at the stations south of Fifty-seventh street will be extended north on the Broadway line at a cost of $280,000. The commission took further steps in arranging preliminary details for the construction of the Fourth avenue (Brooklyn) subway, which will cost, according to estimates, $21,000,000 with pipe galleries or $19,000,000 without. The open excavation method will be employed wherever traffic will permit.

The United States Cast Iron Pipe & Foundry Co., 71 Broadway, New York, announces that its Pacific Coast sales office is now located in the Monadnock Building, San Francisco. Heretofore it has been in the Union Trust Building.

SEASON'S EFFECT

Shown in Chicago Machinery Market. —Will Build Plant.

(Special Correspondence.)

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block,
Chicago, June 18.

The approaching summer had a marked effect on the machinery market during the past week. The trade, though heavy for this time of year, is less than it has been and exhibits a decided falling off from a month ago. Wood working machinery has exhibited an unseasonable strength, but in other lines the normal decrease has been noticeable. Second hand machinery was also affected. Railroad buying has been affected less than other lines because the purchases recently have been for tools the purchase of which could not be avoided.

The Chicago Railway Equipment Co. has completed arrangements for the erection of a new plant which will cover twenty acres. The purchase of property lying between Forty-fourth and Forty-sixth and Lincoln and Robey streets was announced by the company last week. The present plant of the company is at Fortieth street and Princeton avenue. The estimated cost of the new plant is $700,000. The main building will cover two blocks and will contain 200,000 feet of floor space. The office will be a three story building of fire proof construction and will cover a ground space of 80 by 108 ft.

PLAN LARGE IMPROVEMENT.

Vast improvements are to made during the coming year to the plant of the Youngstown Sheet & Tube Co., Youngstown, O., and it is officially stated that $3,000,000 will be expended in making these additions. The program of improvements includes two 500-ton blast furnaces; two 300-ton hot metal mixers, with ore bins; ore bridge and moving car unloader; one butt weld pipe mill, which was authorized by the directors three months ago, and one butt weld and one lap weld mill for making 4 to 10-inch pipe inclusive. The company will also build a new galvanizing plant and is now making a number of other additions in the way of doubling its machine shop and foundry and adding to its electrical power plant.

LABOR TROUBLES

At a Minimum in England—Companies Are Prosperous.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 5.

We are having remarkable freedom from labor troubles. As a rule, agreements are renewed, the latest example being the agreement for the South Wales tin plate trade which was renewed at Swansea for the ensuing year by a recent conference of employers and workmen. There are very slight alterations consisting of a few concessions by employers.

The late mayor of Smethwick, Alderman Jabez Lones, who for many years was the head of the firm of Lones, Vernon and Holden, is to have a memorial. A sum of £398 has been raised and has been handed over to the authorities of the Birmingham university for investment with a view to securing about £12 per annum as a bursary. This is to be tenable by persons resident in Smethwick for twelve months and students in the Smethwick Technical School for at least one session. This method of commemorating the memory of the former chairman of the Unmarked Bar Association, who was a very active worker in various religious, temperance, social and other fields, appears to have commanded general approval.

The great makers and users of iron and steel continue to issue very satisfactory reports. The Metropolitan Amalgamated Railway Carriage & Wagon Co. has decided to recommend at the annual meeting on the 31st dividends of five per cent on "A" preference shares, and six per cent on "B" preference shares, with ten per cent on ordinary shares. The actual profit amounts to the large sum of £252,942 7s 2d, and, in addition to paying the above dividends, the directors carry to reserve £100,000 and carry forward £93,292.

Generally speaking the outlook in the wagon building industry is very cheerful. A few months ago there was some complaining about the comparative insignificant weight of the new orders. But inquiries are coming along now very satisfactorily, and some big orders have been placed by the Indian government. The recently published statistics of wagon and carriage shipments for the first four months of the year show substantial increases all round. It would seem that the great local firms are safe for regular employment for the remainder of the present year.

The Ebbw Vale Co. has greatly improved its position during the past year, having just decided to distribute a dividend of ten per cent, compared with five per cent for the two previous years. The company has had rather a checkered career, having thrice suspnded dividend paying during the past twelve years, and only three years ago the capital was written down by £10 per share. The doubling of the dividend represents an increased distribution of about £35,000. The Parkgate Iron & Steel Co. declares a profit for the year of £77,952, out of which it proposes to pay a dividend equal to ten per cent for the year. In addition it pays a bonus of 9s 8d per share but makes a call for the same amount to make the shares fully paid. This money is to be utilized in the new blast furnaces and the reconstruction of old plate and bar mills.

The Tredegar Iron & Coal Co., has inceased its profits by about £40,000 out of which it pays a dividend of 7½ per cent for the past twelve months as compared with five per cent for each of the five preceding years. A sum of £60,000 is reserved for a new sinking which is in operation at Oakdale.

Much interest is taken locally in the news that at the Clyde Works near Sydney a number of engines are being built for the first time for the New South Wales Government. Sir William Lyne has just received the following telegram from the manager of the Clyde Works: "First locomotive of our contract T class, 110 tons, steamed out of Clyde Works on main line today. Most satisfactory trial."

An event of some scientific significance to the rail trade is the Board of Trade report by Colonel Druitt with regard to the accident on the North Eastern railway near Felling, on March 26 which resulted in the death of two persons. Colonel Druitt attributes the derailment to a sharp kink formed in the down line by expansion of the rails due to an unusually hot sun for the season of the year. There had been a sharp frost in the early morning, followed by a very still day, with hardly a breeze and a hot sun in a cloudless sky.

The 250 blacksmiths, on strike at the Rogers Locomotive Works, Paterson, N. J., have been notified by the American Locomotive Co., which controls the plant, that unless the men return to work the company will shut down the works. The question involved is not one of wages, but is one of a personal nature between the general foreman and the men.

URGES MERCHANT MARINE.

A strong plea for an American merchant marine and an extension of American trade to the South American republics was made before the delegates of the National Association of Credit Men in convention at Chicago, June 12, by Frank S. Dickson, assistant adjutant general of Illinois in speaking in behalf of Governor Deneen. Mr. Dickson clearly pictured the need of "American ships, under the American flag, to carry American goods." "When American merchants have to send their goods to Liverpool to be reshipped to South America, it is high time for us to get busy," declared the speaker in urging the members of the organization to exert their influence with their congressmen for the establishment of a merchant marine. Dwelling upon the apparent lack of interest of American manufacturers in the trade opportunities of South America, Mr. Dickson said: "With an area twice as large as the United States, American merchants control only 12.6 per cent of the trade. Of the 4,742 vessels which entered the harbor of Rio Janeiro last year, there were only seven which carried the American flag, and two of these were in distress."

Southern Hardware Officers.—At the annual convention of the Southern Hardware Jobbers' Association, held last week at Richmond, Va., in conjunction with the annual meeting of the American Hardware Manufacturers' Association, the following officers were elected: President, John Donnan, of the W. S. Donnan Hardware Co., Richmond, Va.; first vice president, W. L. Sanford, of the Roberts, Sanford & Taylor Co., Sherman, Tex.; second vice president, Henry Miller, of Thomas, Barnes & Miller, Memphis, Tenn.; executive committee, O. B. Barker, of the Barker-Jennings Hardware Co., Lynchburg, Va.; Bruce Keener, of C. M. McClurg & Co., Knoxville, Tenn.; and Chas. H. Ireland, of Greensboro, N. C.

Edward C. Adams, who has been long and favorably known in the hardware trade, having been for ten years manager for C. H. Benton Hardware Co., Fond du Lac, Wis., two years Pacific coast representative for Farwell, Ozmun, Kirk & Co., St. Paul, and 15 years president and treasurer of the Adams Hardware Co., Port Townsend, Wash., has removed to Seattle, Wash., and established a manufacturers' sales agency and requests correspondence from iron, steel, hardware and all other manufacturers who desire representation in the states of Washington, Oregon and tributary territory.

GREAT EXPANSION

Of Canadian Iron and Steel Industry Indicated by Statistics.

(Special Correspondence.)

Toronto, Canada, June 18.—A statement has been issued by the census and statistics office of Canada, at Ottawa, showing the values of manufactured products in Canada in 1905, as compared with 1901. The totals are $481,053,375 in 1901 and $712,664,835 in 1906. The principal rate of increase is shown in Ontario, where the output has grown from $241,533,486 to $365,692,144; Manitoba from $12,927,439 to $27,609,268; and British Columbia from $19,447,778 to $38,013,515. The various manufactures are not classified, but the returns from the iron and steel manufacturing centers, indicate that the greater proportion of this noteworthy expansion is due to this industry. The output of Sydney, N. S., has increased from $631,396 to $4,058,659; and that of Sault Ste. Marie from $738,472 to $5,251,643.

The Grand Trunk railway, which has purchased between 25,000 and 30,000 tons of steel rails from the Lackawanna Steel Co., notwithstanding the higher price of American rails on account of the duty, states that immediate delivery was required and that neither the Dominion Iron & Steel Co. nor the Algoma Steel Works was in a position to deliver them before the end of the year.

The trade and commerce department at Ottawa has received a report from J. S. Larke, commercial agent at Sydney, Australia, that the first iron melted on a commercial scale has been turned out in Australia, and that there are indications that the industry will be developed extensively. It is proposed shortly to commence the manufacture of steel by the open-hearth process.

The total amount paid by the Canadian government in bounties for the nine months ending March 31, when the fiscal year terminates, was $1,299,801, the items being as follows: Pig iron, $385,231; puddled iron bars, $311; steel ingots, $575,259; manufactures of steel, $338,998.

The Iowa State Manufacturers' Association, at a recent meeting, passed resolutions declaring in favor of a joint freight rate of 80 per cent of the prevailing local rates applicable to the entire state, with a minimum charge of 25 cents and the absorption by the railroad companies of all transfer charges. The resolution was also adopted favoring manual training and education in mechanical arts and other branches.

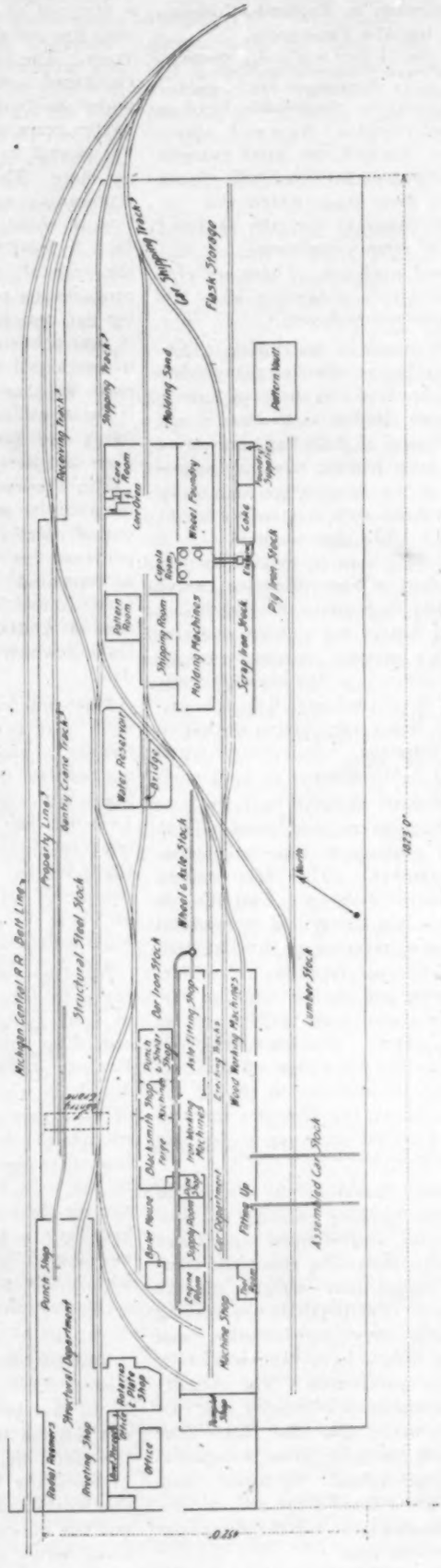


FIG. 1.—PLAN OF PLANT OF RUSSEL WHEEL & FOUNDRY CO.

THE RUSSEL WHEEL & FOUNDRY CO., DETROIT.

A COMPANY MANUFACTURING INDUSTRIAL RAILWAYS.

Car Wheel Foundry and Structural Shop Among the Departments Required.

During the past year, the plant of the Russel Wheel & Foundry Co., has been undergoing a complete remodeling. The improvements include not only a rearrangement of the present buildings, particularly the machine shop and car shops, but also the building of a new foundry and structural steel shop. The new buildings have been in operation for the past ten months. The property covers 19 acres, but no better indications of the company's growth could be cited than that the manufacture of car wheels which, as the corporate name indicates, was at one time the chief interest is now only sufficient to supply the wheels for the logging cars and industrial railway equipment turned out by the company. This developed industry has also led into the building up of a structural steel department for the manufacture of mill, factory and office building material, and has necessitated facilities for doing a general jobbing business in foundry and machine work. Handling this wide variety of work created a natural demand for an engineering department, and so this company is now in a position to undertake the engineering of propositions as varied as the products it manufactures.

A ground plan of the plant, which includes two miles of trackage, private switching engine, cars and locomotive cranes, is shown in Fig. 1. The extent of the storage and erecting yards and the accessibility of all of the departments as a result of the large ground space at the company's disposal are clearly evident. An extended industrial railway system for the company's own use, such as it designs and builds for its clients, is used. As shown in the sketch, Fig. 5, and in Fig. 3, the industrial railway idea is also carried out in the foundry, interior views of which are shown in Figs. 4 and 6. The foundry building, of which Fig. 2 is a view from the yard, is 152 x 378 feet, arranged as indicated in the ground plan, with the cupolas centrally located for distribution of the metal to the main floor, wheel room floor and molding machine department. Fig. 5 shows the main molding floor, which includes a pattern shop, casting cleaning floor and core room. Two Northern Engineering Co. cranes, one of ten tons and the other of 20 tons capacity, traverse the floor, and, in addition, each of the steel wall columns is fitted up with brackets, so that the wall jib cranes may be transferred to any column to serve any part of the floor. The pouring for the large castings is done from a five-ton ladle handled by crane, which is the only exception to the general system of transporting the molten metal from the cupolas in 1,500-pound ladle cars over narrow gage tracks, laid out as shown in Fig. 5

The car wheel foundry consists of four circular floors of 25 wheels each. These floors are served in the usual manner for the handling of flasks and patterns and the metal is run in on spurs to each floor from the track, which runs from the cupola the entire length of the foundry. Along the inside wall are built the annealing pits, each holding 15 wheels and charged by means of three jib

FIG. 2.—VIEW SHOWING STOCK YARD AND FOUNDRY.

FIG. 3.—VIEW FROM FOUNDRY SHOWING CAR, BLACKSMITH, AND STRUCTURAL SHOPS.

FIG. 4.—MOLDING MACHINE DEPARTMENT OF FOUNDRY.

cranes mounted on the wall columns. The molding machine department on the opposite side of the cupola room is equipped with 10 Tabor pneumatic machines arranged as shown in Fig. 4, along the outside wall, one back of the other. Opposite each machine in a row stretching across the bay, the operator sets down his flasks ready for pouring. Along the inside wall running the length of the floor, is the ladle track on which the metal is brought to the molds. Between each row of molds is an alleyway permitting free access and ample space for pouring.

Pig iron is melted in three Colliau cupolas, 78-inch, 78-inch and 72-inch, arranged as indicated. These are located in a square brick room, so that one cupola discharges into the car wheel foundry, one into the main foundry floor and one into the molding machine department, all being accessible by means of the ladle cars to any part of the plant. Blast is supplied by a Connersville blower, running 200 revolutions per minute, with a capacity of 33 cubic feet of air per minute, and is driven by a Westinghouse direct-current, 35-horsepower motor geared to it. For conveying the material to the charging floor above, a convenient method has been devised. Alongside of the foundry, as shown in Fig. 1, is the stockyard, where the scrap, pig coke and limestone are stored. In the center of this yard with narrow gage tracks leading to it from each stockpile, is an elevator enclosed in sheet iron and operated by an electric motor. From this elevator, on a level with the charging floor, a bridge runs across to the foundry but a short distance, so that the material loaded into the charging cars in the yards is carried in them to the elevator, hoisted to the bridge above mentioned, run across to the charging floor and into the cupola with but one handling of the material. Track scales are provided for each cupola, so that the charge may be conveniently weighed.

Views of the new structural shop are shown in Figs. 7 and 8, Fig. 7 indicating the general character of the plant, as seen in the main bays. The general scheme for arranging the tools has been to place them along both side walls and on either side of the center row of columns. This permits of two tracks running the length of the main shop, each flanked by two rows of shears, rolls and punches, which gives a simple system of handling material and allows the various tools to be grouped conveniently for consecutive operations. With the exception of the one row

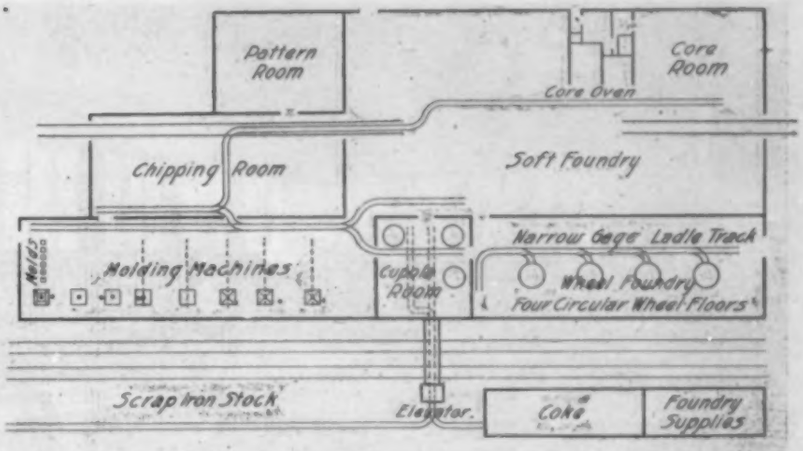


FIG. 5.—DETAIL OF FOUNDRY—RUSSEL WHEEL FOUNDRY CO.

of center columns, the floor space is unobstructed and these columns do not extend all the way to the end of the building. The end of the building free of columns is the riveting department, and is shown in Fig. 8, a clear floor space being available. Here, as well as in every other part of the shop, such pieces as are not handled on the small flat cars can be reached with the air and hand hoist system installed. These air hoists run on I-beam trolleys, as shown in the illustrations, and, by transferring from one to the other, any part of the building can be reached.

A complete and varied equipment of tools for steel plate and shape work is installed, including Long & Alstatter punches, Cleveland shears and small tools for a wide range of requirements. The riveting department is equipped with Hanna riveters. In a wing extending from the main floor are two 12-inch rotary planers for facing off the ends of built-up structural columns. The tools have a long, low bed with ways the entire length, giving a long travel at right angles to the columns in a horizontal direction for the rotating tool head. A number of columns may be set at one time, therefore, and all of the advantages of a single operation obtained.

The demand for logging and industrial cars of all kinds has been increasing very rapidly, and the view of the stockyard for this department shown in Fig. 3 and the interior view of the car shop, Fig. 9, indicate something of the scale on which the manufacture of this equipment is handled at this plant. Adjoining the car shop is a large carpenter shop for handling the necessary woodwork in the car

FIG. 6.—MAIN BAY OF FOUNDRY.

FIG. 7.—STRUCTURAL RIVETING SHOP.

construction and in the foundry, machine shop and structural shops; the iron and steel parts are turned out with jigs, tools and methods which, developed during the experience of the company in this work, promote rapid and accurate manufacture. While the structural steel requirements of the company's own manufactured products are a considerable part of the work done, the capacity of the shop is more largely taken up in the construction of steel building material.

WILL CONSIDER STANDARDS.

At the next meeting of the Central Electric Railway Association, composed of the electric railway officials of the Central West, which will be held at Columbus O., Sept. 27, the report of the committee on standardization will be acted upon. The committee made a partial report at the recent meeting at Indianapolis, but no action will be taken by the association until the complete report is in.

Standards were recommended in the partial report for brakeshoes, axles, journals and journal boxes, tread and flange of wheels and rails for street and interburban railways. The report recommends the use of a brake head and shoe similar to the one which is now standard on the steam railroads, but adapted to a wheel tread three inches wide, and consequently the shoe will be 2¾ inches wide. The committee is decidedly in favor of the shoe without the flange, where it is possible to make these shoes with trucks which permit the use of brake beams. The report reduces the variety of axles and axle journals to four sizes.

BOOK REVIEW.

Concrete Factories, by Robert W. Lesley. New York. Bruce & Banning. 7 x 10 inches. 152 pages. Illustrated. Boards. Supplied by THE IRON TRADE REVIEW for $1.00.

The title of this book, "Concrete Factories," is somewhat misleading as only a part is devoted particularly to that subject. The remainder of the book consists of a useful compilation of reports, rules and general information on reinforced concrete. The report of the sub-committee on tests to the joint committee of the American Society of Civil Engineers and other engineering and manufacturing associations, and the complete report of the French rules may be noted especially. The article by Henry H. Quimby on "A Surface Finish for Concrete" is particularly interesting. The near future will probably see a great deal of work along the line of the improvement of concrete structures from an aesthetic standpoint.

A synopsis of the building laws of some of the larger American cities would have increased the value of this book. No reference to these appears to have been made.

The text is accompanied by numerous illustrations mostly of factory buildings.

Hill on Rails.—In a newspaper interview, James J. Hill is quoted as saying: "The past spring and winter have been the worst on record for rail breakages, It has been said that the evil could be remedied by the exclusive use of the open hearth rail. It is our experience that the open hearth rails break worse than the Bessemer rails. What's the matter? Too much prosperity. People are trying to make too much money. The plants are working too hard and trying to do too much."

FIG. 8.—STRUCTURAL STEEL SHOP.

FIG. 9.—INTERIOR OF CAR SHOP.

ARRANGEMENT OF A PATTERN SHOP IN A CONFINED SPACE.

By Oscar E. Perrigo.

The requirements of this case were as follows: The available space was in the corner of a large machine shop. The width of this space could not be over 24 feet, although the length might be whatever was necessary to accommodate from three to six men, and the equipment of machines, which consisted of a band saw, a jointing (a "buzz") planer, a surface planer, a circular saw (provided with both cross cut and rip saws), a large and a small lathe, the former provided with an overhanging face plate for large work, while the smaller one was practically a small speed lathe.

One other condition had to be reckoned with—the line shafting ran in line parallel to the length of the space, so that either new shafting would have to be put up or the machines set crosswise of the shop. The practical pattern-maker will realize what this means, with reference to the circular saw and the surface planer which must frequently work up lumber 16 feet long, when he considers that the entire space is but 24 feet wide.

However, by proper arrangement of the facilities at hand, a very convenient and comfortable little pattern shop was obtained, and is now in efficient use. It is the purpose of this article to show how it was done.

Fig. 1 is a plan of the shop as finally arranged. It is 24 x 60 feet, and has a line shaft running the entire length, nearly over the small lathe and just inside the partition. The elevator shown on the plan is situated midway across the end of the floor and furnishes a convenient means of bringing in lumber and of moving patterns in and out.

The obstructions encountered in carrying out a plan was the elevator and the necessity of a clear passage from it through the center of the floor and a line of posts 18 feet from the sidewalk and 15 feet apart. The first limited the width of the pattern shop, while the second had to be avoided in locating the machines.

In order to run long boards through the principal machines set crosswise of the shop, openings were left in the partitions opposite each one and at a proper height, as shown by dotted lines. To prevent sawdust and chips from flying through these and into the shop, a matter strongly objected to by the insurance companies, these openings were closed by doors hinged at the bottom. These openings were 18 inches high and as wide as the capacity of the machine rendered necessary. Near the elevator are double doors, opposite to which is a clear space between the machines for taking patterns in and out.

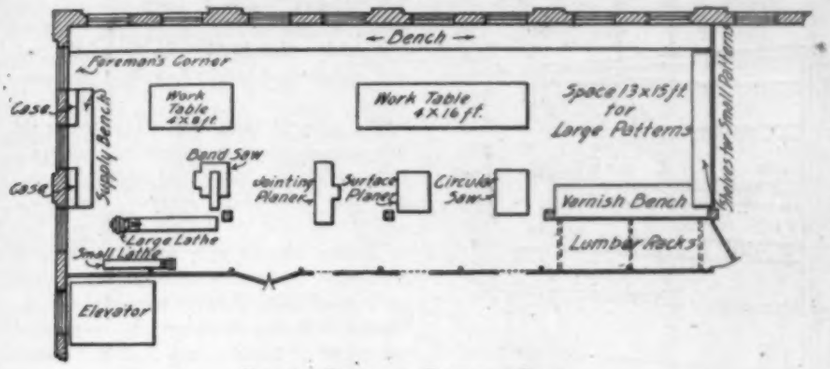


Fig. 1.—Plan of Pattern Shop.

A work bench occupies the entire length of the room at the outer wall and furnishes sufficient space for five pattern-makers on ordinary work. A work table 4 x 8 feet is located near the foreman's corner and near it the band saw. The large lathe is located with its head toward a window, so as to afford ample light when doing work on the overhanging face plate. The small lathe is set close to the partition, as much out of the way as possible and yet near enough to the large lathe to be convenient to the tools in use upon it.

Opposite, the surface planer and circular saw is a large work table 4 x 16 feet and built low enough to permit long boards worked in these machines to pass over it. Next to this is a floor space 13 x 15 feet, where large patterns may be handled. This disposition and the space afforded is ample, as no very large or very long patterns are made.

Across the end of the room near this space is a series of shelves upon which may be stored small patterns, many of which are made and many more brought in for alteration and repairs. The varnish bench is located here, this corner being usually devoted to the finishing and varnishing of patterns that may be handled by an apprentice.

In the patternmaker's bench, along the front wall, are the usual drawers, one large and one small one for each man. The small drawer is used for such small articles and tools as may be most frequently needed, while in the larger drawer is stored more bulky and less frequently used tools, etc., while on the walls between the windows are the tool cases of the men and suitable shelves upon which may be placed such articles as brads, screws, etc., and by which arrangement the bench space is saved from unnecessary litter and rendered available for its legitimate uses as a *work* bench.

Pattern shop supplies cost a considerable amount in the course of the year, even for a very moderate sized shop, that is, if these goods are first class, and it is very short sighted policy to purchase an inferior grade with the idea that it is economy. Consequently, it becomes a matter of considerable importance how we store, care for and issue these supplies, and right here we may

Fig. 2.—Supply Cabinet.

find the legitimate field for practicing economy.

In this case the foreman's corner is one provided with ample light and conveniently located for arranging suitable means for storing such supplies as are needed in the shop. Fig. 2 shows the supply bench and cases built and provided as follows: The bench, proper, is built of the usual height 12 feet long 30 inches wide. At the left hand end a space 10 inches in height, the width of the bench and four feet in length is occupied with pigeon holes for holding wood and leather fillets and wood dowels. Beneath this is formed fifteen boxes for holding rapping plates. At the right hand end is a cupboard 18 inches deep, opening at the end of the bench and having one shelf—this is used for holding alcohol cans, shellac jars, etc. To the left of this space is provided for six shallow drawers properly divided for storing pattern letters and figures. Next to these are three large and deep drawers where bulky packages and surplus articles may be stored. All these compartments are protected from dust except those for the rapping plates and the ends of the fillets, which latter may be covered by a door hinged at its lower edge, if desired.

This supply bench is located under a window which occupies a space equal to one-third its length; consequently, it is not possible to build cupboards or shelves through the entire length. Therefore, two cupboards are built each four feet wide, three feet high and 12 inches deep. These are closed by double doors and provided with shelves suitable for storing such articles as brads, wood screws, glue, shellac, sand paper, dry colors for making colored varnishes, beeswax, brass dowels and a variety of similar articles. Lamp black must be kept in a closed sheet metal can and in some open place where it can have plenty of air and be readily seen, on account of its liability to spontaneous combustion.

Pattern lumber of a good quality is difficult to find, expensive to purchase, requires considerable care in its preservation in proper condition and should be used with due regard to economy. It was from considerations similar to these that the lumber racks shown in Fig. 3 were designed and built. As will be readily seen, it would be awkward and inconvenient to carry lumber in through the double doors, and the plan of piling the lumber on its flat sides, even with the various pieces separated by thin strips, would so place it as to be very inconvenient to get at certain thicknesses that might be in the middle or bottom of the pile; again, no lumber is in as good a condition when resting on its side as upon its edge. By placing the thickest lumber at the bottom of the rack and graduating to the thinnest at the top, the weight is properly distributed and the labor of putting in and taking out the planks and boards very much reduced.

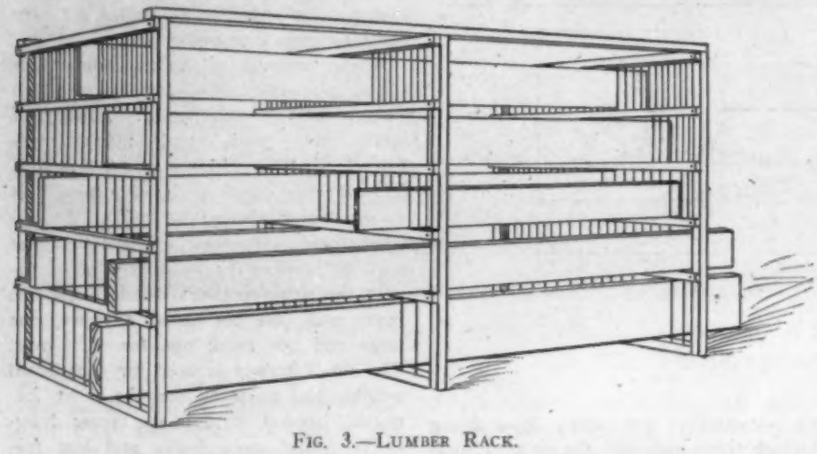


FIG. 3.—LUMBER RACK.

This lumber rack is composed of three frames, each about six feet wide and six feet high, composed of sides and base of 3 x 3 spruce and having five cross bars of 2 x 3 spruce bolted to them, as shown. Between these cross bars are vertical pieces of half-inch, round iron, whose upper and lower ends rest in holes in the cross bars. In this case the rods at the top may be long enough to pass through the upper, the second and into the third cross bar. The third and fourth space may be constructed in the same manner, while the rods of the bottom section should be considerably farther apart, so as to admit four-inch planks. Those at the top may be not over three-quarters of an inch apart. It will be found advantageous to plane the lumber to certain regular thicknesses as soon as it is received, as this will permit it to season better, and although the lumber is purchased as kiln-dried lumber every patternmaker is well aware how little fitted for good pattern work most of this lumber is when he gets it.

The three frames described are placed six feet apart, fastened to the floor and the partition and secured at the top by the long upper rails, as shown. This rack, being located at the corner of the room permits convenient access through the door at the end for introducing lumber, and the opposite end being open to the pattern shop permits its ready removal.

By enclosing this rack on the inside and top, providing a tight door at its inner end and supplying it with a steam coil under the lumber, a very efficient and economical dry room may be produced.

The general plan and arrangement of this pattern shop is submitted, not only as one that has answered admirably under the somewhat adverse conditions which rendered its design necessary, but as having several very practical features that may be incorporated in the design of a shop under more favorable circumstances. Among these may be mentioned the form of lumber rack and the supply bench and their location with reference to the other component parts of the design. The object is, of course, to so arrange these that while all the machines are conveniently near the workmen and each other for practical use, they shall not be so arranged as to obstruct or injure the efficiency of the workmen in their regular duties.

A USEFUL ATTACHMENT FOR THE ADDING MACHINE.

An attachment has been devised for the Burroughs adding machine by W. R. Gaither, 6220 Lexington Ave., Chicago, which is intended to make it especially useful in railroad work and iron, steel and manufacturing plants. Heretofore, when the machine has been used in connection with pay-rolls, material accounts, car mileage, tonnage, sales and such other statistics, it has been used merely for ease and accuracy in totaling these figures after they have been posted by hand in the ordinary way. Mr. Gaither's attachment permits the machine to receive a roll of paper which is adapted to reel back and forth for daily entries, on which, for instance, for the purpose of making up pay-rolls, the time of each employe for each day is credited, and, in addition thereto, his accrued time is constantly brought up-to-date by the use of the machine in making registration. The result is a printed record of the time and also of the totals. At the end of the period the work of posting and totaling is complete as soon as the last day's work is entered. The attachment is equally advantageous in figuring tonnage and mileage statistics where the figures are large and tedious to post and add.

DEVELOPMENTS IN THE COLERAINE DISTRICT

Office of THE IRON TRADE REVIEW,
411 Providence Bldg.,
Duluth, June 1.

Evidences of the large area to be opened and of the character and size of the ore deposits to be mined in the Coleraine district have become very plain through the progress of winter and spring work in the Canisteo, Holman and adjoining pits. In three directions the work is particularly active, stripping, experimenting with the washing of ore and in drilling the surrounding territory most of which is known as the Walker lands, obtained by the Steel Corporation about a year and a half ago.

What has been done in stripping the Canisteo mine is shown in a manner by the sketch Fig. 1. This shows not only the original pit but the new approaches which have been opened into the adjoining property, the stripping of which will now proceed simultaneously with the work in the Canisteo. Both of the cuts will be widened out on either side to form the prospective mines and the approaches will continue to be out through the Canisteo pit toward the D. M. & N. track conforming in a way to a centralized scheme of operation. An idea of the extent of the work may be gained from the fact that the pits cover an area in the neighborhood of 4,500 feet square in their present outlines. Figs. 2 and 3 are views of the Canisteo pit taken a couple of months apart and the change even in that short time is readily discernible. It is one of the largest stripping operations on the range.

In the sketch Fig. 1 the steam shovels working in the pit are designated by the square and inscribed "S." With an increased number of shovels and the milder weather, not only an increased aggregate of yardage is being removed per month, but the records of each shovel are being improved. About a million yards of surface have already been excavated. During the month of May when the ground was thawing out, a great deal of trouble was experienced with the tracks, particularly those which had been laid on the frozen ground. The pit is not so dry as it might be and both in the pit and on the dump locomotives and cars alike were continually leaving the track. This condition will be very largely improved shortly with the drying out of the ground. On the dump the customary troubles prevail though the stripping material is much improved since last fall and a larger dumping area is available. Along the side of Knob Hill above the end of the lake, a trestle is being built as a part of the arrangements for flushing the dirt down the side of the dump. This plan was at one time contemplated also for the Holman dump, but it was found that the muskeg and clay slid off the dump of themselves not only fast enough to take care of a prodigious quantity of material, but, having forced the bottom of a neighboring lake up even with the surrounding surface, bade fair to shut off the drainage river a couple of hundred yards away.

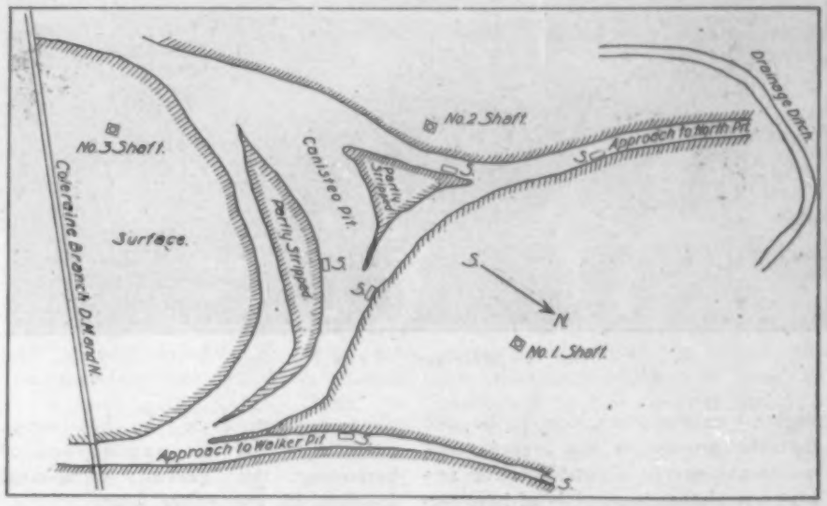


FIG. 1.—STRIPPING AT THE CANISTEO MINE.

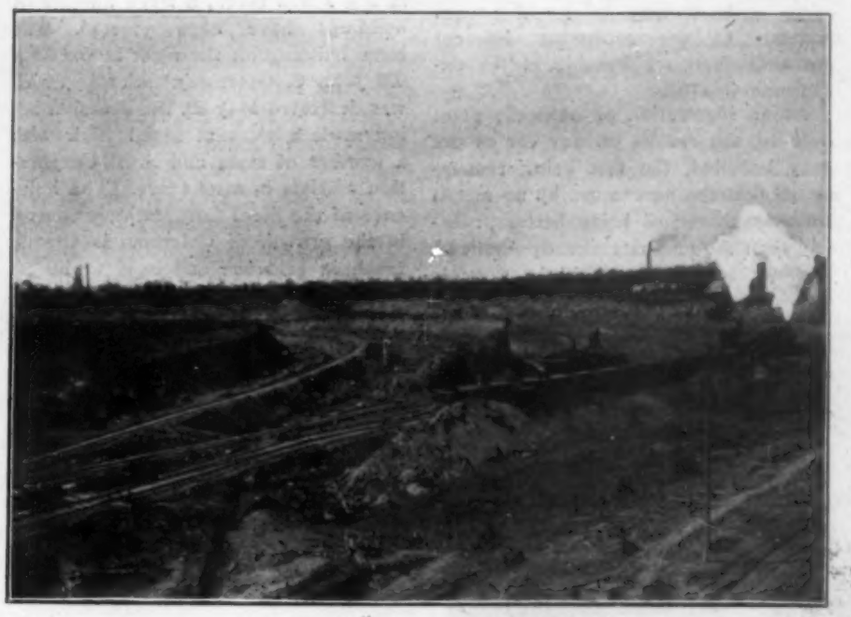


FIG. 2.—STRIPPING AT THE CANISTEO.

At the washing plant, some very encouraging results have been obtained. The experiments with the smaller washing machines at the Holman followed by the trials made with the temporary plant but recently finished and for the first time operated three weeks ago at Coleraine have brought complete assurance that the ores of this section of the range will be handled economically and will when washed be an excellent product. Without the

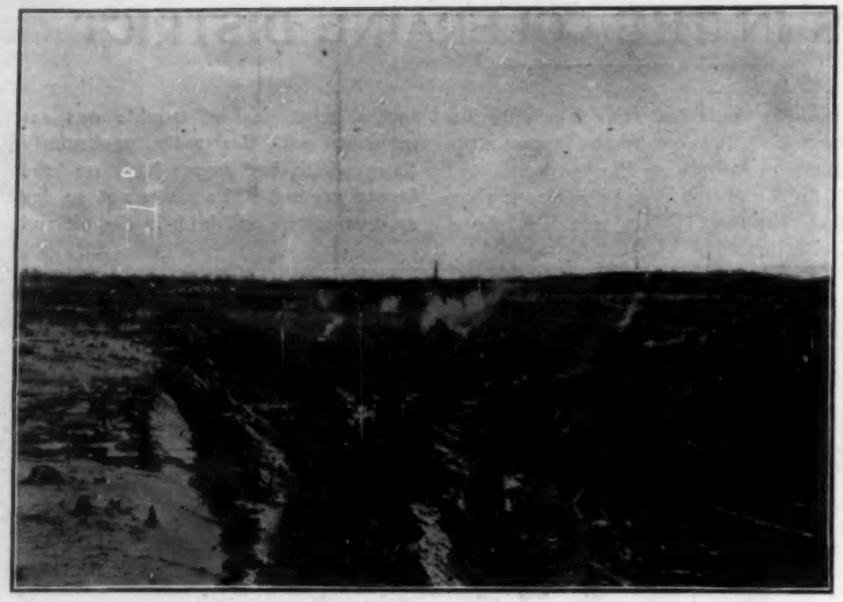


FIG. 3.—STRIPPING AT THE CANISTEO.

slightest exaggeration it may be said that the process at the present time leaves the ore in a condition for furnace use almost impossible of improvement. Absolutely free from fine particles, it is of a coarse grained structure, hard and of marked uniformity in size of particles.

Such improvements as appear to be possible are in the direction of reducing the percentage of iron in the tailings, which in the beginning of the present experiments ran on an average about 20 per cent of minimizing the quantity of water required per ton of stock, of devising means for getting the wet ore, which may or may not be encountered, indefinitely, out of the steel cars, where it packs very solidly, into the washing bin, of maintaining by various schemes of water spraying, the most complete suspension of the fine sandy particles during the washing and of perfecting the general mechanical features of the entire plant.

It may develop that the mixing of immense quantities of ore, 2,000,000 tons annually, for example, will require some other means of handling beside the simple flushing with water. It is apparent that an enormous quantity of water will be necessary, and on a large scale it may be found advantageous to use somewhat different methods than are suitable in the experimental stage.

As an illustration of what the plant will do, the results on one car of ore may be cited, the fact being remembered that the figures are by no means an average record being better probably than the majority already obtained, but not so good as will be possible with the permanent plants to be erected. The stock from the mine ran 36 per cent in iron, 0.04 per cent in phosphorus and 36.9 per cent in silicon. The washed product showed 57 per cent iron, 0.05 per cent phosphorus and 7 pen cent silica. What this means scarcely needs to be commented upon. A Bessemer ore of splendid physical structure, washed at a low cost and with a source of supply that has not yet begun to be measured up, seems certainly to justify the investment of $5,000,000 already put into this district by the Steel Corporation. All of the ore is not Bessemer, of course, but on the other hand all of it does not require washing. A view of the washing plant is shown in Fig. 4.

FIG. 4.—WASHING PLANT AT COLERAINE.

The present temporary plant described at some extent in THE IRON TRADE REVIEW last December has but half the capacity intended in the permanent design where the coarse screen into which the stock is first washed from the receiving bin will discharge into log washers on both sides instead of just on one side as at present. The capacity of the plant as it is running is ahead of the rating and one run of 40 tons, approximately, was made in 23 minutes.

The town of Coleraine is growing very rapidly. Even in the month or two that have elapsed since the view in Fig 5 was taken, a large number of buildings have been erected. The large building on the right is the $80,000 John C. Greenway school which was dedicated May 29, the occasion being made a pleasant social affair with a number of state and Steel Corporation officials in attendance. The influence of the Steel Corporation's control in the growth of Coleraine is already much in evidence and it is to be regretted that an equally beneficial guidance was not available for a number of the other mining towns on the range.

At the Holman mine, about 600,000 yards of the surface has been stripped and this season will see quite a tonnage of ore shipped. Fig. 6 is a sketch of the pit and the dotted lines indicate the outlines of the muskeg swamp which has been the chief source of trouble. As the ground softened this spring and the shovels started to cut through the clay, large sections of this swamp would slide out into the pit and Fig. 7 shows one of the shovels nearly buried in muskeg. The picture does not indicate clearly the situation, but the swamp was piled up against the shovel on a level with the roof. The

FIG. 5.—THE TOWN OF COLERAINE.

largest part of that trouble, however, is probably past. Figs. 8 and 9 are two views of the mine. While it will ultimately be of advantage, when the pit is larger, to have opened it up in the circular form in which it is being developed, for a while the shape necessitates the usual condition of sharp turns in making cuts and just now difficulties of that nature are being felt.

The present dumps are pretty short and new ones on the opposite side of the hill are to be built. The work on the building of the spur for hauling out the ore is waiting on timber for the completion of a trestle over a part of the grade and it is possible that for a time the ore will have to be taken out on the stripping tracks. Advantage has been taken of whatever natural opportunities the layout and location of the mine offer and tracks, equipment and routine of operations, all indicate unusually good condition and maintenance.

Gilbert Mine.

The Gilbert mine, which the Steel Corporation began opening up last fall and stripped continuously through the winter, is one of the company's big undertakings of the last six months. The accompanying sketch indicates the general contour of the pit and the manner of opening the deposit. The surface to be removed has included a lot of troublesome material, the approach to the pit through the cut under the Duluth & Iron Range tracks being almost entirely in muskeg and the surface on either side still to be stripped is very unstable. The ground rises from either side up to the grade of the railroad, but by cutting through under it and building a trestle the stripping can be carried out almost on a level at the present depth. At the west end of the pit the ground slopes off again, so that the surface is carried out to dumps from both ends as indicated. The approach for the ore spurs is just being graded, but the trestle has been built and tracks are being laid on it.

The surface equipment and buildings are just being erected. Two shafts are down for draining the property and are located about as shown in the sketch. There are four shovels in the pit and about 200,000 yards of dirt have been taken off. No ore will be gotten out for shipment this season.

The McKinley pit, where the Corporation is opening another new mine, is expected to ship 200,000 tons of ore this year. Work has only been in progress for two or three months, but the surface is not as heavy as at some of the other propositions and the ore can be reached more quickly. About 40 feet is the average depth of the overburden. The pit lies east and west and is being opened in the south four forties of the property, which consists of eight forties altogether. The present pit is within one shovel cut of its north edge and it will be opened out on the south side. There are two shovels working.

The drilling on the south forty of the Pettit mine, controlled by the Republic Iron & Steel Co., has not yet been finished, but work on the development of the mine will probably start after the middle of the summer. The Monica shaft of the same company between McKinley and Biwabik is down to a depth of 84 feet. It is hoped by the operating interest that the quicksand which has been encountered at the adjacent shafts of the Kellogg will not be met with. There is some justification for this hope despite the fact that the material coming out of the shaft at present looks foreboding in that marked differences exist in the surface conditions on the two forties, the change due to some folding of the stratum occuring almost on the dividing line.

At the Kellogg, which is the New York State Steel Co.'s mine and the only deposit on which $1.00 a ton royalty is known to have been paid, three shafts have been started. The first was put down to a depth of 95 feet, running into quicksand. Another shaft was then started with the idea that by working them alternately, each in turn draining the other, both could be put down to the ledge, the second shaft serving eventually as a

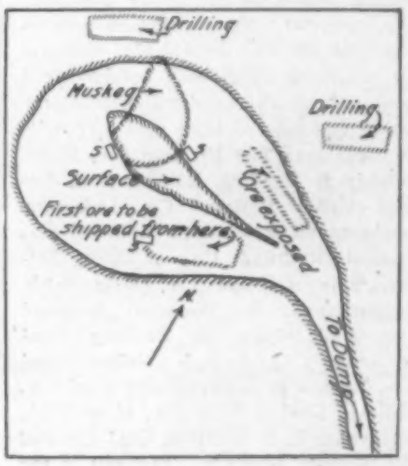


FIG. 6.—THE HOLMAN MINE.

timber shaft. When the second shaft had reached a depth of 84 feet, it was decided to put down a drop shaft. The practice is not commonly necessary on the Mesabi range, though it has been done before, as, for instance, in the sinking of the Troy shaft at Eveleth. The Bangor shaft, with which so much trouble has been experienced, is also a drop shaft, but unique in that it is of concrete where ordinarily the common wooden shaft is strong enough. The third Kellogg shaft is on the south edge of the ore body and well located, the intention being to drift over under the ledge to No. 1 shaft. The shaft is down about 40 feet and dropping 6 feet a day.

FIG. 7.—SHOVEL NEARLY BURIED IN MUSKEG.

Charge Coal Monopoly.—The United States government has filed suit in the United States circuit court, Philadelphia, against the anthracite carrying railroads and several coal companies, charging them with conducting a monopoly in the production, transportation and sale of hard coal. The defendants are: The Reading Co., Philadelphia & Reading Railway Co., Lehigh Valley Railroad Co., Delaware, Lackawanna & Western Railroad Co., Central Railroad Co. of New Jersey, Erie Railroad Co., New York, Susquehanna & Western Railroad Co., Philadelphia & Reading Coal & Iron Co., Lehigh Valley Coal Co., Lehigh & Wilkes-Barre Coal Co., Hillside Coal & Iron Co., New York, Susquehanna & Western Coal Co. and the Temple Iron Co. The suit is the result of an investigation conducted by the department of justice a year ago.

THE DESIGN AND CONSTRUCTION OF FOUNDRY BUILDINGS.[1]

BY GEO. K. HOOPER.

The foundry business has become so specialized and such rapid strides have been made in the elementary knowledge of the methods and requirements of manufacture that it is difficult to make any general remarks on the subject of foundry construction. I will, however, endeavor to describe some of the plants which I have designed and which comprise foundries devoted to the casting of the smallest forms of large sections with practically no core work, to the most specialized shops using machines almost exclusively.

For plants engaged in heavy work I have made designs in two ways. In one instance, owing to the form of the site and the location of the railroad tracks, it was found advisable to place the stock house and melting equipment at one end of the foundry permitting all of the other operations to divide from that point as a basis. For this shop a straight open building, three bays in width, was built, the second bay having been provided with cranes of sufficient capacity to handle the largest ladles, as in this case the work was such that the ladle of iron was the heaviest thing to be handled. Single rail electric travelers were also installed in the main and side bays, provided with suitable wedges to facilitate their movement from one department to another. In addition to serving the foundry these trolleys were used for cleaning up and for conveying scrap, sprues, gates, etc., from the foundry to the stock house.

The melting equipment was in the middle of one end of the foundry and was separated from it by a brick wall. The spouts of the cupolas projected through the latter and were adjustable so that large or small ladles could be filled at any distance from the furnace. The brick wall also kept the slag fumes out of the foundry and the drop was likewise confined, which made the work of cleaning up comparatively easy. The cored and small work was done

FIG. 8.—THE HOLMAN MINE.

[1] A paper presented at the Philadelphia (May, 1907) meeting of the American Foundrymen's Association.

close to the cupolas, while the large work, on which the temperature of the iron could vary considerably without affecting the castings, was placed where most convenient.

Cleaning Department.

The cleaning department was located at the end of the building opposite the cupolas, partly in the center and partly in the side bays, the design being such that as the foundry increased its output the building could be increased in length and the cleaning equipment moved along to provide additional molding space. With the growth of the plant in view, mills, grinders, and the sand blast machine were placed as far down as possible, that they need not be moved until the second extension to the foundry was made. The contour of the site was such that the waste material could be moved out of the side and end of the shop for filling purposes.

Owing to the peculiar location of the railroad tracks, the stock house was placed across one end of the building and the track was extended up to the charging floor, making it possible to unload several carloads of coke and iron on to this floor. The space underneath the trolley was utilized for the storage of iron, coke, sand, fluxing material, etc., and the whole was enclosed by a like building which contained a single rail electric traveler for handling material to the cupolas and the foundry, and which connected with the trolleys in the latter.

Main Building.

The main building was of steel frame construction, with brick curtain walls, and was provided with a wooden roof covered with slag roofing and with large, wooden frame sliding sash windows. The floor of the foundry consisted of molding sand laid on filling, although no pit work was done. Ventilators with tilting sash operated from the floor extended practically the width of the center bay, and while there were no skylights, sidelights were depended upon for all of the illumination, the windows having been carried as high as possible for this purpose. Large galvanized iron ventilators were placed in the roof at every other bay, to provide for the circulation of air when not pouring and in inclement weather.

The foundry was about 350 feet long, and if it were increased in size to make other melting equipment necessary, the cupolas would be installed at one side sufficiently far down to conveniently distribute the iron according to the varying classes of work to be poured. It is not probable, however, that this will be done, as there seems to be no reasonable limit to the distance which a ladle of iron for heavy work can be carried.

Foundry for Machinery Castings.

A foundry of another type for the production of medium and large machinery castings, with a fair proportion of cored work, was laid out partly in accordance with the contour of the site on which it was located, due regard being given to the location of the railroad tracks. This foundry was of the usual three-bay type, having one large center bay and two smaller ones on either side. The stock house was placed at one side of the property adjacent to the railroad track and contained all of the raw materials except the iron, which was carried in the yard commanded by a crane. The stock house has an elevated track extending through it, that all supplies could be dumped by gravity from the cars in which they were received and thereafter conveyed under cover into the foundry. This stock house need not darken the side of the foundry which it adjoins, since it can be located far enough away to permit the placing of windows down to a level about seven feet above the floor, with a light well at least twelve feet wide. In any event it makes little difference whether the light is somewhat obstructed on that side, since the melting equipment occupies some of it, and with a foundry for this class of work there are core ovens, drying ovens, sand mixers, core storage, coremaking, and other departments which do not require much light,

FIG. 9.—THE HOLMAN MINE.

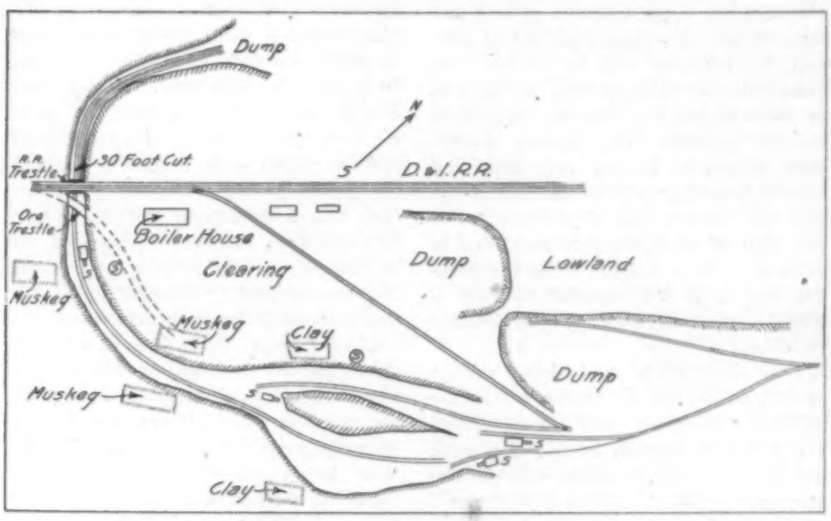


FIG. 10.—THE GILBERT MINE.

while others can be suitably lighted by skylights.

The coke is raised to the charging floors on cars by means of a plunger elevator, while the iron from the stock yard is carried by a single rail traveler directly on to the charging floor.

Both the melting and cleaning departments are fixed points in this scheme, the foundry with its stock house and yard growing away from these departments, and additional melting equipment can be placed in the side bay if required.

Cleaned castings are stored in a yard or building at right angles to the foundry, communicating with the machine shops. As there is considerable core work a large amount of refuse has to be elevated by cheaply built conveyors to a set of overhead bins, discharging into cars or wagons.

Since a foundry of this type will have some pit work, the flooring will naturally consist of sand to a considerable depth with brick or concrete floors in the cleaning department. The cleaning floor space will absorb some of the molding room as the foundry is extended, but otherwise this department will not be disturbed.

This type of plant presupposes a large establishment divided into departments, castings being made at the option of the foundry rather than in response to some demand from the machine shops. This plant is to be built with masonry walls having a wooden roof covered with slag or gravel, wooden window sash, partly sliding and partly tilting, large monitor with tilting sash, galvanized ventilators, core room partitions fire proof, and with floors in front of the drying ovens and the core room of concrete construction.

Foundry for Chilled Castings.

Another type covering several classes of large work is designed to grow in two directions, being devoted to a large amount of chilled work. The melting equipment, including air furnaces, is located in the center of the building, and the space immediately in front is occupied by the ladle and chill storage and ladle mending departments. Inasmuch as the molds for the sections made in this plant are cast on end, a proportionately greater tonnage can be secured from a limited floor space, as compared with a plant where floor molding is done exclusively. Considerable room is required in a shop of this kind for handling ladles. Separate power cranes are also required for each pit and liberal head room is necessary. The floor about the pits in front of the drying ovens should be made of concrete. The growth of the other end of the plant devoted to the production of general castings will be similar to that of the large foundry already described.

Arrangement of the Plant.

A plant of this kind may be divided into three or more bays, the furnaces being so located that they are accessible to the main bay cranes. The stock house and iron storage may be located as previously explained. The charging floor, on account of the cupolas necessary to supply all of the mixtures required, should be served by an overhead crane which can carry large pieces of scrap and carloads of pig iron to any cupola or furnace.

While the area required per molder in lighter gray iron work may be as great or even greater than in heavier work, the tonnage handled is proportionately much smaller. Frequently no overhead equipment is required, tracks or trucks being amply sufficient for handling the iron. Certain floors may require

GEORGE K. HOOPER.

comparatively large amounts of iron and separate handling appliances, but in general the buildings will be divided into bays, with the melting done at one end or one side and the cleaning department directly opposite. The pickling department should be located away from the natural line of growth so that extensions will not disturb this department. For this class of work the core room can be established at a distance from the foundry and it is not essential to have it directly in or adjacent to the foundry building.

The stock sheds and iron storage should, of course, be convenient to the melting department and the overhead crane is not essential to the iron yard. Tracks and cars connecting with the elevator are as economical as a yard crane, when all of the handling is considered. A separate building should also be provided for the storage and repair of molding machines.

In a foundry of this type it will be found necessary to install light overhead travelers which can serve either the molders or the machines and which, in any event, can handle the iron. Considerable space is also necessary in a plant of this kind for stacking flasks, as it is not practical to have a large flask yard or to build a separate structure for them. Galleries can be used very well as storage room.

Plants Equipped for Special Work.

Foundries equipped with machines for special work will next be considered. They can be built several stories in height with a foundry on the upper floor and the other departments underneath; or where there are a number of foundries in a group, the buildings should be two stories, with a foundry on the top floor. The various foundry buildings should be located so as to conveniently receive their supplies from one stock house and their cores from another, with a pattern storage and repair department over one or the other of these buildings. The buildings should be designed with sufficient head room in the lower story to accommodate large tumbling mills with a platform over them for suitably distributing stock, the mills being high enough to dump their contents either into barrels or onto conveyors. A floor should also be provided for the foundry with a frame for a suitable grating through which the sand can be dropped and on which castings can be piled after shaking out.

The roof should have sufficient strength to support travelers for carrying the molds and iron, and all bracing should be kept above the trusses as far as possible to provide for conveyors for handling sand to the molding machine hoppers. The trusses should be designed with a stiff lower chord and should be of such form that the apparatus may be fastened to it anywhere without punching or drilling. A durable floor can be made of paving brick laid on planks with a cushion of sand, the planks having previously been covered with a waterproof material to prevent dry rot. A floor of this kind can be changed for any purpose more easily than one of steel or concrete and is furthermore much lower in first cost.

The castings are dropped through chutes in the floor to the mills below, where the sorting, cleaning and grinding are done, although a certain amount of sorting can be done on the foundry floor by judiciously locating the machines on similar work.

Continuous Work.

Plants for highly specialized work, involving carriers for handling molds, flasks, castings, etc., will next be considered. There are two types, one with the building two or more stories in

height, with a carrier on the upper floor, while the other has the carrier and the other departments on the ground floor. The price of the real estate and the size of the cores largely govern the design of a plant of this kind, as the output is large in volume and must be handled by conveyors, and there is little advantage in the use of gravity.

I have built plants of both types and have found either well suited for the work for which it was planned. In one case the core room and core storage were located so that the cores for all classes of work could be placed on the carrier with a minimum amount of handling and each car of the carrier brought a fresh core to replace the one taken away. All departments, including the cleaning room, were on the ground level. Such a plant requires a large amount of light and ventilation and windows and skylights are placed wherever possible. The floors are preferably of concrete, as practically no sand collects upon them and as the pouring is done while the flasks are in motion on the carrier, there is little danger of spilling or splashing iron. In another plant producing very small castings the carrier was placed on the second floor and the finished sections were delivered by means of a conveyor through a separator and cooling tank to a continuous cleaning apparatus on the first floor. The cores were handled in trays.

The roof of such a foundry should be very heavy and substantially braced in all directions, as it must support considerable overhead conveying apparatus for the handling of sand with concentrated loads at various points where the sand happens to be located. The floor should be of brick or concrete, preferably the former, for reasons which I have already given. There are no great floor loads with carriers, but a complicated flooring system is usually necessary on account of many conveying devices which are used. In the construction of buildings brick walls, either with or without steel columns for supporting the trusses, have been used.

Types of Construction.

There are other forms of wall construction from which choice can be made, such as reinforced concrete, concrete plaster on wire lathe, concrete blocks, terra cotta hollow blocks with or without steel reinforcing strips, brick, corrugated iron, and wood. The last two are rarely used at present, wood being objectionable on account of the fire risk, and corrugated iron in view of its short life. Of the other materials the question of relative cost is a large factor, and a suitable selection must be made to fit the case in hand.

I have always presented plans of all my buildings to the reinforced concrete contractors, that they might compete with the other forms of construction, but I have not yet been able to secure a bid or to have a building built as cheaply by them as from other materials, and when I say this I accord due appreciation to the question of insurance, as locality and contents are considered by the underwriters as well as the type of the building.

I am somewhat opposed to reinforced concrete on account of its lack of what I term "manufacturing elasticity," since it does not adapt itself very well to alterations and extensions which are constantly being made in plants devoted to foundry work. Brick, concrete blocks, and hollow tile are the most adaptable, brick probably being more so than any of the others. Considering the present price of brick, no saving can be effected by the use of the other two forms of covering, although in the large foundries to which I refer, the weight of the steel can be maintained at the minimum by the use of hollow tile above the windows.

For interior partitions hollow tile makes a firm, cheap wall. Concrete plaster on wire lath, expanded metal, or galvanized netting usually requires so much supporting steel that it is quite expensive and practically costs more than brick and does not possess the advantages of the latter.

Steel roof trusses should be carefully designed so that they may be conveniently reached with cleaning and paint brushes, especially in foundries of the continuous type, where considerable vapor arises from the cooling sand. The trusses and columns should be carefully and thoroughly painted. Roofs are cheaply constructed of wood, with slag or gravel covering. This covering is favored in view of its low first cost, as against slate, tile and special forms of reinforced concrete. I have had only one disastrous experience with a roof of this kind and that was due to the fact that the sprinkler system had not yet been connected.

Windows except where there is an exposure, are generally made with wooden frames, glazed with factory ribbed glass and should be fitted to tilt, thereby securing the greatest possible opening. There was at one time a craze for making walls almost entirely of glass and steel. These buildings, however, are difficult to heat in winter and to ventilate in summer, while the glare of the direct sunlight is most unpleasant. Many plants of this kind have adjusted curtains to the windows and have glazed portions of the windows and in some cases large sections have been removed.

A building wall containing 50 per cent of window space will usually be very completely lighted for any width of structure and in any event passages and storage departments can be placed in the darker sections.

I am an advocate of metallic bars and ribbed glass for skylights, and in continuous foundries where a large amount of vapor is present a copper bar is cheapest in the end.

All of the floors I have described have been used successfully, but there is one type that I have not referred to and which is built of ordinary brick, with rails laid thereon, over which the flasks of the machines can be moved as the case may require. The rails should be laid down on sleepers in a sub-base of concrete, if this floor is on the ground level. The floors of the charging departments should be made of steel plates without tracks or in fact any ridges of any kind to interfere with the free movement of trucks and the use of shovels or forks. The cupolas should be set fairly high so that a man may work conveniently under them and to facilitate also the handling of ladles of various sizes. This is especially a desirable feature for continuous foundries where a ladle reservoir is provided with a skimming device which is located between the cupola and the pouring ladle.

The charging door I usually make very large, with a heavy cast iron curb, that a truck of scrap or coke may be run right up to it and dumped in. The opening is best protected by a wire screen raised and lowered by counterweights. The installation of spark deflectors depends somewhat on the location.

I sincerely hope that some one will soon devise a practical cupola blast regulator. I have some ideas on the subject myself, but have been too busy to develop them.

Depending on the work, I advise from 11 to 14 feet above the tuyeres as the proper height of the opening in the cupola for economical and rapid melting. After considerable experience with tuyeres of various types, I still adhere to the old-fashioned square box tuyere as being the most reliable and efficient. Blowers vary in accordance with the service they are to render, my preference being for a positive blast blower for cupola work, with independent engine or motor, as circumstances may dictate. The motor should be provided with a speed regulator to control the melting, the latter being imperative for continuous practice. For air furnaces the centrifugal blower seems to be best adapted, a simple unloading device being sufficient for its regulation. It is, of course, needless to say that the larger the fan within reasonable limits, the smaller the consumption of power.

I also advocate the slagging of the iron as the melting proceeds, and the tonnage of the heats will naturally indicate whether or not a special conveying apparatus should be used for handling this slag. A wheelbarrow is, of course, the simplest device.

Raw Materials.

The coke should be kept under cover and handled as little as possible. Scrap should be handled according to its nature, as no single method will answer for all grades, although the magnet seems to be more adaptable than any other method. A system of handling pig iron will depend upon the amount consumed. Small quantities for small cupolas which must be broken can be handled more cheaply by common labor, while large tonnages offer a prolific field for the use of a magnet and adds considerably to the storage space. I have yet to be convinced of the value of a cupola charging machine. Storage yards for charging materials should be served by an overhead crane and industrial tracks should be used as little as possible.

Plunger elevators are best adapted for charging floor service. Whether the machine should operate directly by hydraulic pressure or with some elastic medium interposed between the water and the source of power will depend largely upon conditions. In large foundries and especially for continuous work, I usually provide a speaking tube between the melter and the charging floor that the chargers may supply coke in accordance with the demand for iron from the floor. From this you can see that the melting ratio is of comparatively little importance in this work, when compared with the cost of a completed mold. Frequently the core alone costs several times more than the coke employed in melting the iron.

Cranes.

For handling large flasks I prefer a locomotive crane, as it gives the greatest flexibility with the least expense. The practice of running an overhead crane through an opening in the end of the building is very expensive and unsatisfactory, requiring as it does expensive building construction. It is furthermore impossible to keep tight against the weather while the flask yard is limited to the space directly in line with the crane runway and generally in line with and obstructing the growth of the foundry. By the use of the locomotive crane a site of any shape can be utilized and the crane can enter the foundry at almost any point. As it is operated by steam, it can be driven independently of the plant. For indoor flask storage, trucks and elevators provide suitable and convenient means for handling.

Belts of a liberal size with bucket elevators are best adapted for handling sand when it is to be delivered to the various parts of the foundry mechanically. Belts may safely be used for receiving hot sand dumped out of flasks, though containing many sprues, much shot and chaplets. Belts also may be used for handling flasks in continuous work even though they are hot and of considerable weight. I also advocate sand riddles with bronze wire, as it lasts longer than iron, steel or brass. Wood or reinforced concrete is the best material for sand hoppers, conveyor troughs, etc., while all the advantages are in favor of wood.

Continuous Systems.

In designing continuous systems, whether wholly or partly automatic, care should be taken to keep the various operations independent of each other that any interruption to any one may not affect the others. The efficiency of this method of producing castings depends largely on the care given to this feature. I have known of some who have failed entirely as a result of the too close adjustment of the various operations, whereas a little room between them would have made the plant a success.

Core rooms naturally depend on the nature of the work. For large and intricate work they should be located in the foundry, while others can be placed in separate buildings and can deliver the cores to the foundry on conveyors and can later be distributed by boys. For making cores of moderate size to be handled in dryers, I advocate that the benches should be so spaced that the oven cars can operate between them, permitting the finished cores to be placed directly on the cars and when filled they can be run directly to the ovens over suitable tracks. After the cores are baked the cars can be delivered to the core storage room, thus obviating unnecessary handling.

For cores of large or moderate size I prefer an oven which has a long arch at the bottom with fire and combustion chambers underneath and the heat thus radiated will circulate through every part of the chamber. For small cores I had devised an oven heated by oil or gas containing a conveyor. Learning later that the same could not be patented owing to a previous right on a continuous baking machine, I lost interest in the same. A plant which I built has eight of these in operation, using oil in conjunction with waste heat from the malleable annealing ovens.

When cranes and tracks are used, care should be taken to prevent points of congestion at meeting or transfer places.

THE BLAST FURNACE—IV.

By Horace Allen.

In continuation of the effect of water vapor in the atmosphere upon the working of the blast furnace, the following diagram has been prepared from particulars relating to a blast furnace at Liege (Belgium), making basic Bessemer iron.

During a period of 12 months, average determinations of the moisture in the air, the consumption of coke and the make of iron were recorded and published in the *Times* Engineering Supplement of Aug. 30, 1905. By plotting these results in the form of a graphic diagram, the curves clearly show the connection between the amount of water vapor carried into the furnace and the extra coke required to counteract the cooling effect. If we assume the lowest coke consumption at this furnace, in January, was equal to the weight of iron produced, we find that an increase in the atmospheric moisture from 2.756 to 5.687 grains per cubic foot required the coke per ton of iron to be increased from 2,240 to 2,528 pounds in July, and at the same time the output of the furnace decreased to 70 tons. The maintaining of the temperature of the air blast at about 40 degrees Fahr. on entering the blowing engine at this furnace would result in:

1—An increased output of above the present average of 8.6 per cent.

2—A reduction in coke consumption below the present average of 4.6 per cent.

The figures given also show that for each 0.0105 grains per cubic foot of moisture one pound of coke extra is required, but while the water vapor would only be equivalent to 1.289 B. T. U., the extra coke, as burned under furnace conditions, represents 6.570 B. T. U., which indicates that other conditions affecting economy are associated with the reduction of moisture in the air supply. In considering the question of the most economical method of reducing the moisture carried by the blast, it is necessary to bear in mind the following facts:

1—The temperature of the air controls its capacity for holding moisture, but it does not follow that at any given temperature the air is always saturated.

2—The amount of moisture which the air can carry at the point of saturation is independent of its density.

Therefore, when refrigerating methods are applied, the whole volume

of the air used has to be reduced in temperature, regardless as to whether it is saturated or nearly dry. Absorption methods would not be subjected to the same conditions, for the amount of absorption would be only that due to the amount of water carried by the air, without regard to its temperature. Where the removal of moisture is effected by treatment of the air, after it has been compressed in the blowing engine, by refrigeration, less cost would be entailed, for while one cubic foot of air at atmospheric pressure requires at 32 degrees Fahr. 2.128 grains of moisture for saturation, if the blast was compressed to two atmospheres absolute, or 15 pounds per square inch gage pressure, two cubic feet measured at atmospheric pressure would occupy only one cubic foot at 15 pounds, and for saturation, only the same weight of moisture would be necessary, i. e., 2.128 grains. In this connection, the reduction in coke consumption in furnaces where the application of dry air has been tried during that portion of the winter months, when owing to the low temperature there was only a low proportion of moisture in the air, it cannot be attributed that the reduction of 433 pounds of coke[1] per ton of iron found when using dry air, was due entirely to the removal of the moisture, so some other explanation must be sought.

During the month of February, 1905, Mr. Gayley reports that with an average moisture of 1.19 grains for daytime and 1.17 grains for the night, with a maximum variation of 0.30 to 2.57 grains of moisture per cubic foot, the furnace supplied with dry blast required 433 pounds of coke less per ton of iron than a companion furnace working on normal blast.

During the month the average moisture was:

	Day.	Night.
In atmosphere	1.19	1.17
In dry blast.....	0.65	0.54
Difference	0.54	0.63

and comparing these with the figures given earlier for the Liege furnaces, we would have at 0.0105 grains per pound of coke reduction

Day 0.54 grains = 51.4 pounds of coke.
Night 0.63 grains = 60.0 pounds of coke.
Maximum 1.34 grains = 128.0 pounds of coke,

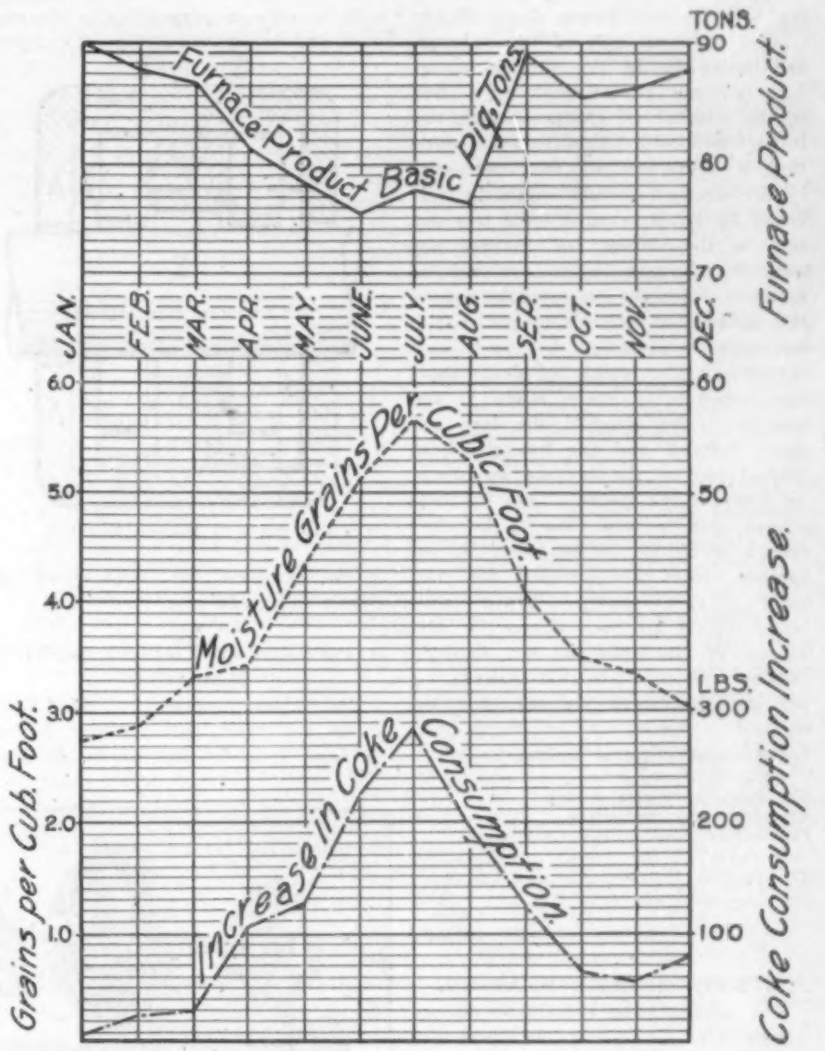
whereas the actual reduction in coke was 433 pounds per ton of pig. An examination of tables relating to the physical properties of air in a dry state and when saturated with moisture, gives no clue to the high economy in coke consumption given, so some other explanation is required, and this is probably to be found in the effect of preventing variation in the conditions obtaining in the hearth of the furnace due to changes in the moisture content of the air from time to time, as has already been explained, because it is impossible to regulate the carbon requirement to the heat changes when these changes occur at comparatively short intervals.

The statistics given by Mr. Gayley for the month of February, 1905, show that, although the average amount of moisture in the air was low, the variation was very irregular, and it is this want of regularity which necessitates the employment of such an amount of coke as will provide for the extreme variation occurring during the short intervals. If we compare the proportions of the ingredients passing through the furnace per ton of iron made, when using dry blast in February, we have:

	Pounds.
Iron ore ...	4,271
Coke	1,815
Air	9,388 = 117,353 cubic feet,

and the weight of the air is nearly double that of the other ingredients taken together.

Owing to this high proportion, it is obvious that any comparatively slight change taking place in the temperature, moisture content or richness in oxygen, will have very considerable effect on the heat developed in the hearth of the furnace, and any new condition that can be brought about, which will make the composition of the air supply more constant will lead to a reduction in the weight of coke required, even regardless of the removal of moisture. This is on the same lines as the very remarkable reduction in the weight of fuel brought about by the employment of the heated blast, over that required when only cold blast was in vogue. In this connection, it will be obvious



Effect of Water Vapor on Operation of Blast Furnace.

[1] "The Application of Dry Air Blast," by James Gayley, New York, Iron and Steel Institute meeting, England, May, 1905.

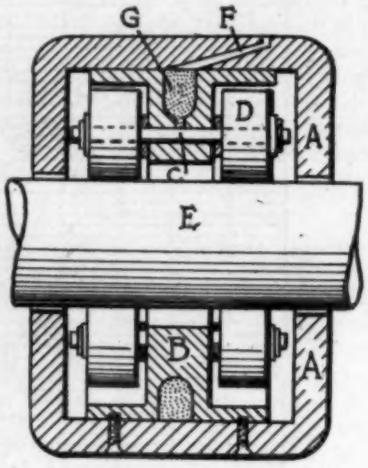
that the periods of time during which the blast is "off" the furnace must have a considerable effect upon the fuel consumption, and if a furnace could be so arranged that the supply of blast was quite continuous, it would lead to a reduction in the weight of coke necessary per ton of pig. As the fuel forms about 65 per cent of the total bulk of the charge, any reduction in the proportion of fuel required is followed by a rise in the number of charges which the furnace will hold. Calculation will show that a reduction of two per cent in the amount of fuel would be followed by an increase of over one per cent in the number of charges put into the furnace. The removal of moisture from the blast would reduce the volume of gas produced by the equivalent volume of hydrogen and carbonic oxide, which its decomposition would bring about, while, as the less the coke charged the less the gases formed, and the less the heat carried out of the furnace as physical heat in the gases. Less air employed, due to less coke to be consumed, would be accomplished by increased blast temperature for the same stove capacity. These combined effects are well shown by Mr. Joseph W. Richards[3] in Mr. Gayley's results. Saving per 100 pounds of pig iron produced by the dry air method:

On decomposition of moisture of blast	2.95.
On heat in waste gases	5.25.
On lessened radiation	3.70.
On better combustion of carbon to CO_2	6.90.
On smaller heat in slag	0.10.
On less heat in blast	0.40.
	19.30.

A NEW ROLLER BEARING.

The accompaying illustration shows a new type of roller bearing devised by William J. Brewer, Trenton, N. J., known as the oilless radial bearing. It differs from the ordinary type of roller bearing in that the rollers are not free to revolve around the axle, but are fixed in place and rotate on axles of their own.

The bearing is shown in section in the accompanying illustration. The journal box A is made in halves and contains a ring B T-shaped in section, which carries at proper intervals axles C extending out on either side of it. On these axles are mounted rollers D, which sustain the load carried by the main axle E. The rollers are separated from the ring B by distance pieces, and are secured on the axles by means of washers and cotter pins. The bearing is lubricated by means of graphite fed by means of a grease cup through a duct F and into the channel G extending around the ring B. The bearing is split either parallel with its axis or perpendicular thereto.

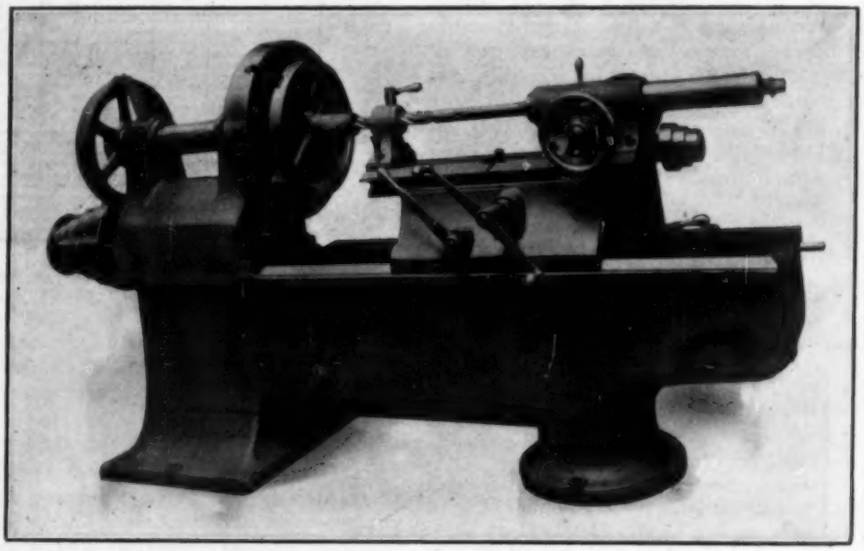


THE BREWER ROLLER BEARING.

It is designed for service on all classes of machinery.

A POWERFUL PULLEY BORING MACHINE.

The accompanying illustration shows the Streit patent pulley boring machine, built by the Cincinnati Pulley Machinery Co., Cincinnati. This machine, whch will take work up to 36 inches in diameter, possesses the general appearance of a lathe, and is extremely powerful and massive in all its parts. The tailstock carries a slide on which is mounted the dead spindle of the machine and a guide for supporting the outer end of the drill or cutters used in boring the pulley. The spindle is fed forward by means of a rack and pinion operated either by a hand wheel or by a worm and wheel driven by the cone pulley giving three changes of feed and shown at the rear of the machine. Without moving the tailstock a total movement of the drill may be secured of 24 inches by the combined movement of the slide and spindle. The machine can be used to bore to a depth of 30 inches. The supporting of the drill directly in front of the work adds materially to the stiffness of the machine and increases the amount of metal that may be removed on one cut. The machine is driven from a two-speed, double-friction countershaft, which, with the four steps on the driving cone pulley shown, gives eight changes of speed. The cone pulley drives the main spindle through a train of gears whose ratio is 4:1. This spindle has a diameter of 4½ inches and the hole through it is 1½ inches in diameter. A 4-jaw, heavy pattern, 24-inch independent chuck is furnished with the machine. The spindle on the slide is bored for No. 5 Morse taper and bars may be bored any taper giving a large range and quick change for cutters and reamers. By the use of machine reamers after drilling all cost of hand reaming is saved and the reaming is done in less time and more accurately than with hand work. The total weight of the machine is 3,600 pounds and the length of bed is 7 feet 6 inches.



THE STREIT PULLEY BORING MACHINE.

[3]Discussion on "Notes on the Gayley Dry Air Blast Process," by C. A. Meissner, Iron and Steel Institute meeting (England), 1906.

DISSATISFIED UNIONS

Force Rejection of San Francisco Strike Settlement—Plants Close.

(Special Correspondence.)

San Francisco, June 17.—It is all off again with the settlement of the iron workers' strike. In this city of earthquakes, graft, and industrial strife, conditions change with lightning rapidity. Thousands of iron workers expected to return to work June 10, but the shops were closed against them; nor will the foundrymen and owners of machine shops and ship building plants reopen until they have some assurance that the employes will perform their obligations. The employers have taken a firm stand against any more trifling with contracts and agreements, and they have determined that they will resume operations when all the men of the unions constituting the Iron Trades Council will accept the terms ratified by that council and the unions.

The strike of the iron trades in San Francisco and vicinity, which was inaugurated May 1, throwing an army of workmen out of employment, was settled by an agreement, the terms of which had been formulated by a joint committee of employers and of the Iron Trades Council, with the aid of officers from the International Molders' Union, and a conciliation committee formed by the Civic League, representative of all classes of citizens. The Iron Trades Council ratified the agreement, and passed it up to the affiliated unions for ratification by referendum vote. The latter act was considered a mere formality, but proved a stumbling block. Some of the unions balked and refused to ratify, giving as their reason that the terms were less favorable than the Metal Trades Association had offered before the strike. That was quite correct. An offer of an increase had been made, but the unions declined all offers, and, after the lapse of some days, the Metal Trades Association informed the unions, through their central council, that unless the offer was accepted on or before a certain day, the offer would become void. The strike was called in spite of that warning. The men went out at the call of their unions, and the offer was void.

The Iron Trades Council, at a subsequent meeting, again ratified the agreement, and received assurances that all affiliated unions would do the same. In this the leaders were mistaken. The unions voted for ratification, but one lodge of machinists at a recent meeting in which the radical element was in control, refused to accept the offer, thereby precipitating the present muddled condition of affairs.

THE ROBERTS THREE-PASS FIRE BRICK STOVE.

The illustrations on page 1008 show a new type of three-pass fire brick stove, designed and patented by Frank C. Roberts, of Philadelphia. As indicated, the stove is cylindrical in form, the brick work being arranged to provide a central cylindrical combustion chamber surrounded by four down-pass regenerators and four up-pass regenerators, the latter communicating with the chimney located on top of the stove. Access to the bottom of the combustion chamber is provided through four arched openings A, which extend from the combustion chamber to the outside of the stove. The hot blast outlet is connected to one of these arched openings and the gas inlet to another. In the illustrations the gas inlet is shown at right angles to the hot blast outlet, an arrangement which causes the flue dirt entering with the gas to accumulate in the arched opening directly opposite the gas inlet, from whence it may readily be removed through a cleaning door. This arrangement of four openings, through which access may be had to the combustion chamber, facilitates the cleaning of the bottom of the combustion chamber and, in this particular, removes the objections which have prevailed against central combustion chamber stoves.

Above the top of the combustion chamber there are provided two arched passages at right angles to each other, affording communication between the top of the combustion chamber and the four down-pass regenerators B. The down-pass regenerators communicate as indicated, with the four up-pass regenerators C by means of openings in the dividing walls at the bottom of the stoves. The up-pass regenerators are open to the space at the top of the stove which in turn communicates with the chimney.

The valves are of the usual design except that the chimney valve is air-cooled by the action of the chimney in drawing air through the operating lever into the valve and thence into the chimney.

The inventor calls special attention to the following points in this design of stove:

Construction.—As indicated, the main walls of the combustion chamber are made with special brick while the walls dividing the stove into the up and down passes act as stay walls to prevent the deformation of the combustion chamber. No bond exists between the walls of the combustion chamber and the dividing walls, thus allowing the expansion of the one to take place independently of the other. The dividing walls are held rigidly in place laterally by the checker brick. The arches and walls at the top of the stove forming the passages between the combustion chamber and the down-passes B are supported by the third pass regenerators C which extend to the tops of the arches.

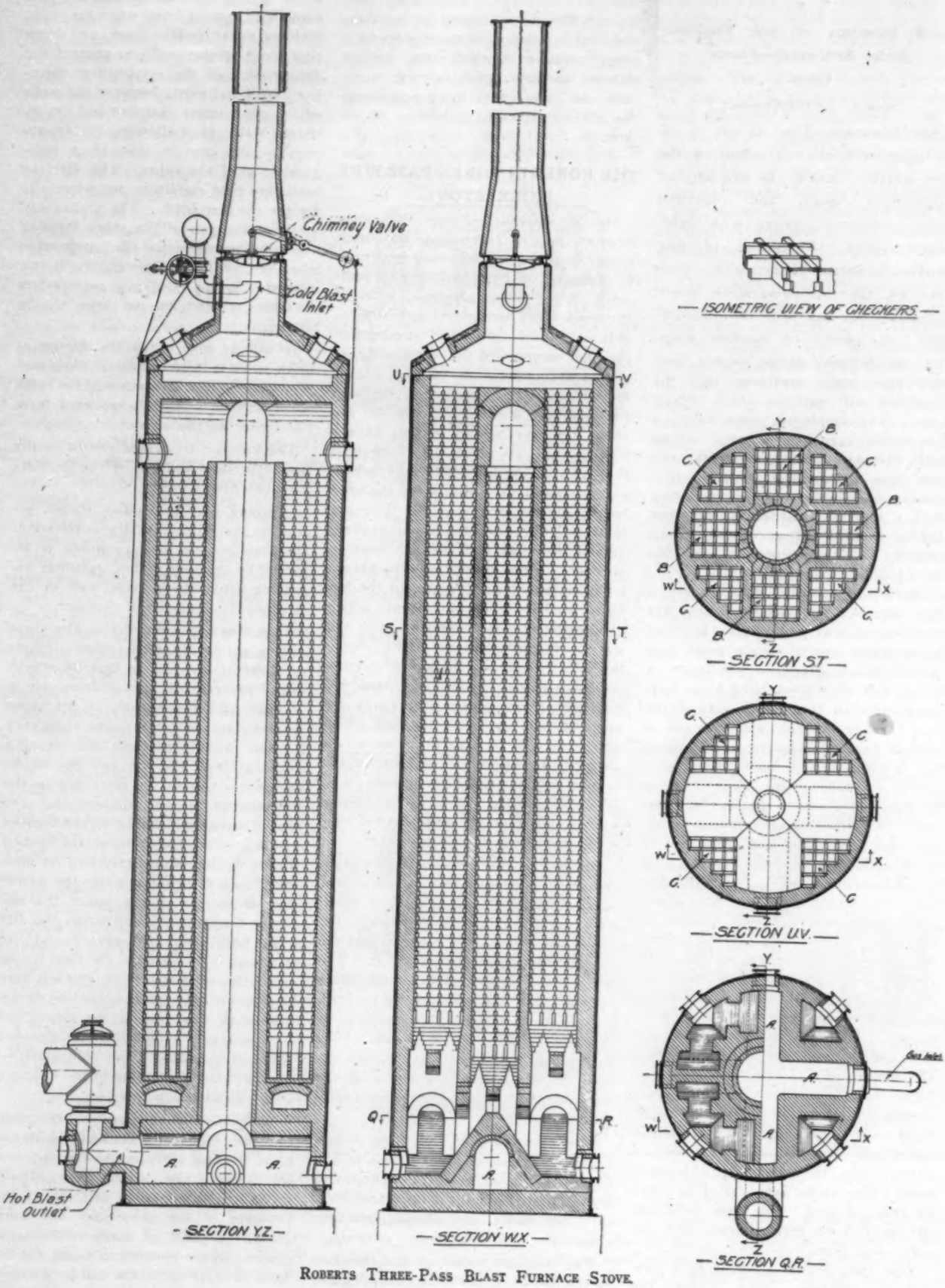
It will be noted that the design of brick work is symmetrical in cross section whereby the expansion of the brick work will be uniformly outward from the center of the stove.

The checker brick are shown in the isometric view and are of the Roberts patented design.

Cleaning.—As previously stated, access to the bottom of the combustion chamber for cleaning purposes is afforded by the four arched openings extending from the outside wall of the stove to the combustion chamber.

It is also to be noted that the stove differs materially from other designs of three-pass stoves in that all regenerator passes, both up and down, are in contact with the outside of the stove whereby access to all regenerators may be had directly through the cleaning doors at both the top and bottom of the stove. Again, by reference to the illustrations, it will be seen that the arched openings leading to the bottom of the combustion chamber are formed within sloping walls extending on both sides from the spaces under the down-pass B to the spaces under the up-passes C; by this construction the dirt from both the down-passes and the up-passes is delivered to the four spaces under the up-passes from which it may be removed through the cleaning doors. Access to the tops of the down and up-passes is provided through cleaning doors as indicated. The cold blast inlet is located in the base of the chimney under the chimney valve.

The constructive features present in this design of stove, combined with the large heating surface and the facilities for cleaning the various parts, appear to offer a satisfactory solution of the problem of the three-pass fire brick stove. A plant of these stoves is at present under construction and the results of their operation will be watched with interest.



ROBERTS THREE-PASS BLAST FURNACE STOVE.

Stock Market Continues in Dull State.

Marked by the smallest business day in respect to transactions and by a further contraction in the sale of bonds, the New York stock market has passed through a dull week with sagging prices. On Thursday the sales on the exchange were less than 190,000 shares, the smallest total for any day since June, 1905. Though the price movement of the week was narrow, it was generally toward lower levels, and at the close there was considerably more activity at the reduced quotations. The range of fluctuation was less than two points in the average price of 20 active securities. The market during the week showed lack of confidence of operators to take on stocks, and in technical parlance the situation is termed a "waiting" market. A favorable factor was the more cheerful view of the wheat prospects. The government report announced during the week has had the effect of quieting the apprehension which has been felt, of a possible total failure of the wheat crop. The report showed the condition of winter wheat to be 77.4 per cent, against 82.7 per cent a year ago, and spring wheat 88.7 per cent, against 93 per cent a year ago. The money situation appears to be more stringent and call loans during the week touched 4 per cent with time loans also ruling firmer. This condition was emphasized by the export of $2,000,000 in gold to Paris, making the total outflow since May 27, when it began, $12,400,000. The New York bank statement was not so unfavorable as looked for, although further reductions in the total cash holdings and excess reserve were shown. The reserve surplus decreased $1,465,900, the loans decreased $1,689,500 and the deposits decreased $4,869,200. The present surplus reserve stands at $4,514,625, compared with $7,073,375 the corresponding week in 1906. The volume of business on the New York stock exchange in the week was comparatively small, totaling 2,458,400 shares, against 3,207,540 shares last week and 4,302,000 the corresponding week last year. Sales of bonds aggregated in value $4,291,000, against $5,575,000 last week and $12,251,000 the corresponding week in 1906.

Copper Stocks.

Boston.—Butte Coalition, closed 23; net loss in week 1½; Calumet & Arizona, closed 153, net loss, 3; Calumet & Hecla, closed 775, net loss 15; North Butte Mining, closed 76, net loss, 5; Osceola Mining, closed 119, net loss, 6; Quincy Mining, closed 110, net loss, 4.

New York.—Amalgamated Copper, closed 81½, net loss 5¼.

Financial Notes.

Recent dividend declarations include the following: Otis Elevator Co., regular quarterly dividend of 1½ per cent on its preferred stock, payable July 15; American Nut & Bolt Fastener Co., regular quarterly dividend of $5 a share and an extra dividend of $5 a share, payable June 20; Westinghouse Air Brake Co., regular quarterly dividend of 2½ per cent and extra dividend of 2½ per cent, payable July 10; Standard Coupler Co., semi-annual dividend of 2½ per cent on the common stock, an increase of ½ per cent, and the regular semi-annual dividend of 4 per cent on the preferred stock, payable June 29; Railway Equipment Corporation, regular monthly dividend of 1½ per cent, payable June 15; General Electric Co., regular quarterly dividend of 2 per cent, payable July 15; American Iron & Steel Mfg. Co., quarterly dividend of 1¼ per cent on its common and preferred stock, payable July 1; Standard Screw Co., semi-annual dividend of 3 per cent on the common stock, an increase of ½ per cent, and the regular semi-annual dividend of 3 per cent on preferred stock, payable July 1; Sloss-Sheffield Steel & Iron Co., regular quarterly dividend of 1¼ per cent on the preferred stock, payable July 1.

In accordance with plans developed some time ago to divert a fair proportion of the immigration of this country to southern ports, Frank P. Sargent, commissioner-general of immigration, has been appointed chairman of a commission to select sites for immigrant stations to be built at New Orleans, Galveston and Charleston. About $70,000 will be available for the construction of these buildings.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. June 15	Changes in Week	Date 1907 Ann. Meet.	Stock Outstanding	Dividend Basis	Dividend Last Paid	Dividend Date Last Div. Pay.
Allis-Chalmers	10	− ⅜	Sept.	19,820,000			
Allis-Chalmers pr	28¼	−1¾		16,150,000	7 cum		Feb., 1904
American Can	5¾		Feb.	41,233,800			
Am. Can pr	54			41,233,800	7 cum	5 Q.	Apr., 1907
Am. Car and Fdy	40	−2¼	June 27	30,000,000		2 Q.	Apr., 1907
Am. Car and Fdy pr	97⅛	+ ⅛		30,000,000	7 n. c.	7 Q.	Apr. 1907
American Loc.	57	−2¼	Oct. 5	25,000,000		1¾ Q.	May, 1907
American Loc. pr	105	+2		24,100,000	7 cum	1¾ Q.	Apr. 1907
American Ship.	71	−1⅝	Oct. 2	7,600,000	6	1 Q.	June, 1907
American Ship. pr	100	−4⅜		7,900,000	7 n. c.	1¾ Q.	Jan. 1907
Am. Steel Foundries	7	+ ⅜	Oct. 1	15 810,000			
Am. Steel Foundries pr	37	+1⅛		17,240,000	6 cum		Aug., 1904
Barney & Smith	65		June 4	3,000,000	4	1 Q.	June, 1907
Barney & Smith pr	128½			2,500,000	6 cum	2 Q.	June 1907
Bethlehem Steel	11		April 2	14 962,000			
Bethlehem Steel pr	40			14,908,000	7 n. c.	1¾ Q.	May, 1907
Cambria Steel	38¾	−1½	Mar. 19	45,000,000*	6	3 Q.	Feb., 1907
Cambria Iron	47			8,468,000*	4	1S. A.	Apr., 1907
Chicago Pneumatic Tool	41		Feb 18	6,145,800	4	1 Q.	Apr., 1907
Colorado Fuel	29¼	− ⅜	Oct. 21	30,122,000			Apr., 1902
Crucible Steel	85	+ ⅝	Oct. 16	24,578 400			
Crucible Steel pr	68¾			24,436,500	7 cum	6	Mar., 1907
Empire Steel	10		Feb. 27	2,281,400			
Empire Steel pr	55	+2		2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	100		Feb. 19	1,000,000	6	1½ Q.	May, 1907
Fay & Egan pr	128½			1,000,000	7 cum	1¾ Q.	May, 1907
General Electric	137¾	−2¾	May 14	63,643,600	8	2 Q.	Apr., 1907
Harbison-Walker	10½		Jan. 21	13,000,000	6		
Harbison-Walker pr	72			9,600,000	6 cum	6 Q.	Jan., 1907
International Pump	22¼	+ ⅛	June 4	17,762,500		2	Apr., 1905
International Pump pr	68	−6⅝		11,950,000	6 cum	6 Q.	May, 1907
Lackawanna Steel	51	−4	Mar. 13	34,971,400			
Lake Sup. Corp	8¼		Oct. 2	40,000,000			
New York Air Brake	100⅜	−3¾	June 18	10,000,000	8	2 Q.	Apr., 1907
Niles-Bement-Pond	130		Feb. 6	5,000,000	6	6 Q.	Mar. 1907
Niles-Bement-Pond pr	105			2,000,000	6 cum	2 Q.	May, 1907
Otis Elevator Co.	35		March 18	6,350,300		3 A.	Apr., 1907
Otis Elevator Co. pr.	87			6,308,500	6 n. c.	6 Q.	Apr., 1907
Penn. Steel	60		May 13	10,750,000			
Penn Steel pr	99¼	− ½		16,500,000	7 n. c.	3½S. A	May, 1907
Pittsburg Coal Co.	11¾	− ⅛	Feb. 11	32,000,000			Nov., 19.6
Pittsburg Coal pr	50⅛	−2⅜		32,000,000	7		Apr., 1906
Pressed Stl Car	32¼	−1¾	Feb. 20	12,500,000		3	Aug., 1904
Pressed Stl. Car pr	88⅛	− ⅜		12,500,000	7 n. c.	1¾ Q.	May, 1907
Pullman	158¼	−3¾	Oct. 17	100,000,000	8	2 Q.	May, 1907
Railway Stl. Spring	40¾	− ⅝	Mar 7	13,500,000		4 S. A.	Mar. 1907
Railway Stl Spring pr	89⅛	−1⅝		13,500,000	7 cum	1¾ Q.	June, 1907
Rep Iron & Steel	25¼	− ½	Oct. 9	27,191,000			
Rep. Iron & Steel pr	81½	− ⅝		20,416,900	7 cum	7 Q.	Apr., 1907
Sloss-Sheffield	53⅜	−1¼	Mar. 5	10,000,000	5	5 Q.	June, 1907
Sloss-Sheffield pr	95			6,700,000	7 n c	1¾ Q	Apr., 1907
Tenn. Coal & Iron	140	+1	May 7	22,353,060	4	4 Q.	May, 1907
U. S. Pipe & Fdy	34	− ⅛	June 26	12,500,000	4	1 Q.	June, 1907
U. S. Pipe & Fdy. pr	81			12,500,000	7 n. c.	1¾ Q.	June, 1907
U. S. Steel	32½	−2½	April 15	508,302,500	2 n. c.	½ Q.	Mar., 1907
U. S. Steel pr	97⅞	−1⅜		330,281,100	7 cum	1¾ Q.	June, 1907
U. S. Steel 5's	95¾	− ⅛		463,708,000	5	5 A.	
Va. Iron. Coal & Coke	60	− ⅛	Sept. 17	8,641,600			Apr. 1907
Westinghouse Elec	143		July 24	24,998,700*	10	10 Q.	
West'ghouse Air Brake	145½	+2½	Oct. 1	11,000 000*		22½ Q.	Jan., 1907

Par value of shares, $100, except those starred, $50.

NEWS FROM MANY INDUSTRIES.

New Buyers:—

With a capital of $3,000, the Modern Tool Mfg. Co., St. Louis, has been incorporated by John D. Woods, D. J. Flaherty and E. S. Anderson.

J. W. Conway, R. B. Bliss and J. H. Zachry have organized the General Pipe & Foundry Co., Atlanta, Ga., with a capital of $50.000.

The Jacksonville Iron Works, Jacksonville, Fla., has been formed with a capital of $25,000 by B. G. Lasseter, L. H. Heissenbuttel and J. E. Gaynon.

W. D. Johnston, J. H. Thompson, I. H. Johnston and E. J. Goshorn have organized the Johnston Electric Machine Co., Charleston, W. Va., with a capital of $20,000.

Elmer C. Pfeil, W. C. Beckwith, C. S. Church, Glenn E. McClure and Elmer D. Loose have incorporated the Church-Pfeil Tool Co., Fostoria, O., with a capital of $12,000.

The Atlantic Brass & Iron Foundry, Boston, has been chartered with a capital of $35,000 by Philip Broomfield and Morris Broomfield, both of Chelsea.

The Fitzgerald Grate Bar Co., Boston, capital $50,000, has been incorporated by William Fitzgerald, Everett, and W. G. Burns, 39 Wayne Street, Boston.

The Talladega Machine & Foundry Co, Talladega, Ala., has been incorporated with a capital of $5,000 by W. S. White, W. H. Moore and E. S. Moore.

With a capital of $45,000 the Weiner Chain & Iron Co., Lebanon, Pa., has been organized by F. A. and Asa A. Weiner and George E. Holly, all of Lebanon.

The Cedarburg Foundry Co., Cedarburg, Wis., has been organized with a capitalization of $5,000 by John and Theodore Lauterbach, Max and Alfred Goldberg and others.

The Fernway Casting Co., Portland, Me., has been organized with a capitalization of $100,000 by F. V. Chase, J. H. Pierce and J. F. Dana, all of the above address.

Articles of incorporation have been filed by the Webb City & Cartersville Foundry & Machine Works, Webb City, Mo. Those interested are: W. G. Bryant, Isaac Bronsal, Hortense Stewart and others.

The Hoopeston Malleable Iron Works, Hoopeston, Ill., to manufacture implements, tools and machinery, capital $75,000, has been organized by George T. Page, John C. Scully and C. E. McNemar.

The Texas Gin Saw Filing Machine Co., Austin, Tex., has been chartered by John A. Guffee, P. C. Davis, C. W. McCown, R. E. Putnam, William D. Williams and W. M. Dugan, with a capital of $10,000.

The Hamilton Steel Foundry Co., Hamilton, O., has been organized with a capitalization of $50,000 by C. G. Robinson, College Hill; C. B. Funk, C. J. Parrish, Walton S. Bowers and Wilmer S. Brown.

The Harold Foundry & Machine Co., New Kensington, Pa., has been incorporated with a capital of $50,000 by Herman H. Harold, William E. Kenney and Emery L. Sponseller, all of the above address.

The Taylor-Shantz Co., Rochester, N. Y., has been organized by Edgar Shantz, Henry D. Taylor and Fred C. Goodwin, all of Rochester, to manufacture machine shop and factory supplies. The capital stock is $20,000.

Articles of incorporation have been filed by the Cheever Iron Ore Co., Cheever, N. Y., with a capital of $250,000. The incorporators are: Oliver O. Presbrey, John O. Presbrey and Oliver H. Presbrey, Port Henry, N. Y.

The Albert Mfg. Co., Oneida, N. Y., has been chartered with an authorized capital of $10,000 to manufacture shaftings, foundry and factory supplies by James W. Albert, John F. Foster and Agnes M. Foster, all of the above address.

Articles of incorporation have been filed by the Toledo Ornamental Iron & Wire Co., Toledo, with a capital of $10,000. Those interested are: Thomas Boatfield, Ernest A. Elste, Englebert Hauser, J. F. O'Neil and Anna B. Boatfield.

Articles of incorporation have been filed by the National Wire & Iron Works, Houston, Tex., with a capital of $40,000. Those interested are: George P. A. Weisonborn, E. E. Reed, C. E. Johnson, E. W. Jewett and R. G. Smith, all of Houston.

The Allegheny Valley Malleable Iron Co., Pittsburg, has been organized with a capitalization of $10,000 by Peter H. Murphy and John J. Fitzgerald, Pittsburg; William C. Neill, Sewickley; Charles A. Lamber, Glen Osborne and M. T. Kearney, Allegheny.

The McConnell Engineering & Machinery Co., Tacoma, Wash., has been formed by Nivin McConnell, C. A. Foster, Louis W. Pratt, Henry Hewitt Jr., Chester Thorne and H. S. Griggs. The capital stock of the company is $100,000.

The Phillips Pressed Steel Pulley Works, Philadephia, Pa., has been formed by Emil Blais de Sauze, Bertha W. Ficker, Philadelphia, and Albert Lee Magillton, Willingford. The capital stock of the company is $5,000.

The Montour Steel Co., Montour Falls, N. Y., capital $15,000, has been incorporated to manufacture steel, iron and other metals by James Towart and George F. Barton, Montour Falls, N. Y., and Samuel R. Van Campen, Elmira, N. Y.

The Bismarck Iron Co., New York, capital $100,000, has been organized to manufacture iron, steel, etc., by Thomas H. Baskerville, 31 Nassau street; George J. Thomson, 353 West Fifty-seventh street, and Alfred H. Ackers, 233 West 128th street, all of New York.

The Abendroth & Stein, Inc., New York, has been chartered to manufacture sheet iron piping and metal sheet iron work, with a capital of $10,000 by G. Irving Abendroth, 302 West Seventy-ninth street, New York; John J. Stein and J. Andrew Stein, 86 India street, Brooklyn.

The Auricchio Steel Co., Brooklyn, has been chartered to manufacture and deal in iron, steel, ore, copper, etc., with a capital of $100,000. Those interested are: Louis Auricchio and Salvatore Navaro, 27 President street; Nicholas Rendano, 421 Henry street, and Antonio Savarese, 30 Reeves place, all of Brooklyn.

The M. T. Davidson Co., Brooklyn, N. Y., has been incorporated to manufacture steam pumps, hydraulic machinery, etc. The capital stock is $400,000, and the incorporators are: Marshall T. Davidson, 108 James place; William C. Newell, 275 Halsey street; John Lowe, 743 Rogers street, and William A. Drewett, 524 Lafayette avenue, all of Brooklyn, and Oran Baldwin, New York.

New Construction:—

The American Foundry & Casting Co., Dayton, O., is about to begin the erection of a one-story foundry building of steel and concrete to cost $50,000.

The Terre Haute Malleable & Mfg. Co., Terre Haute, Ind., has purchased

ground adjoining its present plant and will erect additions which will double its capacity.

The new plant which the Galesburg Malleable Iron Co., Galesburg, Ill., is erecting is rapidly nearing completion, and it is expected that it will be in operation some time during July.

Work on the new plant of the Hill & Griffith Co., Cincinnati, is progressing very rapidly. It is expected that the factory building will be completed, equipped and in full operation by July 1, enabling the company to resume its former service to its patrons.

The American Scale Co., Independence, Mo., is erecting a foundry adjoining its scale manufacturing plant in that city. The building is 40 x 84 feet in size and will be equipped with up-to-date foundry devices. W. S. Swift is general manager.

The Gogebic Steam Boiler Works, Duluth, is building an addition to its Lake Ave. shop, to be 80 by 100 feet. It will be a brick building with steel frame on a concrete foundation and will be finished it is expected by the first of the year. The tools to be installed will be electrically-driven with individual motors, power being obtained from the Northern Power Co.

The Eagle Foundry & Machine Co., Fort Scott, Kas., whose entire plant was recently destroyed by fire, is now erecting a brick machine shop and foundry, 60 x 200 feet, which will be ready for occupancy in about 60 days. The company is now operating its foundry under a temporary shed. Most of the machinery and equipment has been purchased.

The Manufacturers' Iron Foundry, 785 Union avenue, Bridgeport, Conn., which recently took out papers of incorporation, reports that it has been established for about one year, manufacturing high grade gray iron castings. At the present time the company does not need any equipment, but may later, as it is planning to put up an additional building.

The Wheeling Stove & Range Co., Wheeling, W. Va., is erecting a new plant, the main building of which will be 60 x 100 feet, six stories, of brick construction. New equipment will be added and it is expected that the plant will be ready for operation in July. In a short time the company will put on the market a new design of range, possessing some distinct advantages, and also a new gas stove.

The Bartlesville Foundry & Machine Works Co., Bartlesville, I. T., elected the following officers at the meeting of stockholders: President, R. D. Rood; vice president, George B. Keeler; secretary and treasurer, J. H. McMorrow; general manager, John Johnstone; superintendent, P. Berringer. The officers named and George C. Priestly, W. L. Norton and W. H. Johnson constitute the board of directors. It has been determined to enlarge the scope of the enterprise as originally planned for the plant which will be erected in Bartlesville, a four acre tract in that city having been acquired.

The Wales Foundry & Mfg. Co., New Brunswick, N. J., recently organized, has purchased a tract of six acres in that city and is now having plans prepared for the erection of a new plant for the manufacture of gray iron castings and brass castings. Charles T. Wales, until recently manager and superintendent of the Empire Foundry Co., New Brunswick, and an experienced foundryman, is at the head of the new company and will devote his entire attention to its interests. The company expects to adopt a system of permitting the employes to subscribe for the preferred stock by making a small monthly payment, and 100 shares have been set aside for this purpose.

The Standard Brass Foundry Co., Cleveland, is erecting a building 64 x 98 feet to be used as a molding room. It is planned to convert the present brass foundry into a cleaning department and machine shop. Core ovens will be installed as well as general machine shop equipment, including lathes, etc. The company is now in the market for this equipment. In the new building 10 additional J. D. Smith furnaces will be constructed doubling the present capacity of the plant. The company's line of manufacture includes automobile and manganese bronze castings. It was a partnership but recently it has been incorporated by A. T. Hills, J. A. Van Derver, George R. Daughtery, F. O. Pfaffman and John P. White under the name of the Standard Brass Foundry Co., with a capitalization of $10,000.

The Empire Iron & Steel Co., Niles, O., has completed extensive improvements to its plant. The company now has six sheet mills and three sets of cold rolls in operation and has doubled the size of its roofing and galvanizing departments. The bar mill capacity has been increased for the making of larger quantities of pure wrought iron sheets, either in the flat or in the shape of formed roofing or galvanized material. An increasing demand for this material is noted and a considerable tonnage has been booked by the company. To accommodate the increased capacity it has been necessary to add a 150-foot addition to the main building and a 200-foot crane runway. In the way of equipment, a 400-horsepower Stirling boiler, one new Morgan electric crane, one new electric generator and two new double annealing furnaces have been installed.

General Industrial Notes:—

The Universal Machine Co., Toledo, O., has increased its capital from $10,000 to $25,000.

The Standard Brass Foundry Co., Sidney, O., has increased its capital from $10,000 to $50,000.

At the annual meeting of the Illinois Steel Co. the directors and officers were reelected.

The Alaska Machinery Co., Seattle, Wash., has increased the capital from $5,000 to $15,000.

The Empire Rolling Mill Co., Cleveland, will shut down its plant in that city July 1 for the purpose of making repairs and taking an inventory.

The Harbison-Walker Refractories Co., Pittsburg, has been authorized to do business in Ohio and to employ $330,000 of its capital in that state.

The Connellsville Southern Coke Co., Connellsville, Pa., has been organized by the election of S. J. Harry, president; Frank E. Markell, vice president; J. R. Davidson, secretary, and W. H. Brown, treasurer. The company has a capital of $200,000, and will develop property near Cheathaven, Pa.

The Edward A. Menczer Machine Co., Dallas, Tex., has organized by the election of the following officers: Edward A. Menczer, president; J. B. Moses, vice president, and Walter Gage, secretary.

James O. Timms, who has been connected with the Buckeye Steel Castings Co., Columbus, O., for a number of years has secured patents on an improved car coupler and is interesting Columbus capital with a view to erecting a plant for its manfacture there.

C. C. Nottingham, vice president of the First National bank, Chattanooga, Tenn., has been appointed receiver for the Herron Pump & Foundry Co., of that city. The appointment followed an involuntary bankruptcy petition filed in the federal court against the company by several creditors.

The Hartford Foundry Co., Hartford, Conn., has been reorganized and Charles E. Duston, who had been receiver of the company since Dec.

13, 1905, has been discharged. Additional capital has been put into the concern. The new corporation will take over all the debts and contracts of the receiver.

The Kneeland Mfg. Co., Lansing, Mich., manufacturer of gas and gasoline engines, has purchased the plant of the Anderson Foundry & Machine Co., Battle Creek, Mich., and has removed to the latter city. The officers of the company are: F. W. Kneeland, president; J. Q. Adams, vice president; E. C. Barnum, secretary; E. J. Kneeland, treasurer and manager, and E. G. Satterlee, superintendent.

Deeds from the Woodstock Iron Works to the Woodstock Iron & Steel Corporation, conveying all property of the Woodstock Iron Works, located in Calhaun, Talladega, Etowah, De Kalb, Coosa, St. Clair, Clay and Cleburne counties, have been filed at Anniston, Ala. Along with the deed was recorded a mortgage from the Woodstock corporation to the Standard Trust Co., New York, securing an issue of bonds aggregating $1,500,000. The Woodstock Iron & Steel Corporation was formed in January at Anniston with J. M. Barr as president

The Lunkenheimer Co., Cincinnati, manufacturer of valves and fittings, has revised its charter to conform to its present business which has changed very materially in character since the original grant from the state was made. In the expansion of the business the company has added the manufacture and sale of many articles not provided for in the original charter, and it was for the purpose of strictly complying with the law that the revision was petitioned for. The new charter gives the company a much wider scope and permits of the manufacture of everything it now makes or is likely to make in the future.

Philip H. McMillan has been elected president of both the Detroit Seamless Steel Tubes Co., and the Monarch Steel Castings Co., Detroit, to succeed the late W. C. McMillan. T. H. Simpson has been chosen vice president; R. H. Phillips, secretary, and George M. Black, treasurer, of the Detroit Seamless Steel Tubes Co., while Mr. Simpson has also been made vice president and George M. Black secretary and treasurer of the Monarch Steel Castings Co. P. H. McMillan, with Messrs. Simpson and Black and E. L. Nelson, superintendent of the Michigan Malleable Iron Co., form the board of directors of the Monarch Steel Castings Co.

At the annual meeting of the stockholders of the Western Tube Co., Kewanee, Ill., the following directors were re-elected: A. M. Hewlett, John Duncan, C. E. McCollough, William B. Schiller and John D. Culbertson. The present officers were also re-elected as follows: President, A. M. Hewlett; vice president and general manager, John Duncan; secretary and treasurer, C. E. McCollough. Several additions to the plant of the company have been made during the past year, principal among which was the large new stock building and general warehouse, four stories. Another large addition was the pipe warehouse, equipped with electric cranes and other labor-saving devices.

Trade Notes:—

The offices of the Illinois Manufacturers' Association have been removed to 1225 American Trust building, Monroe and Clark streets, Chicago.

The Dayton Pneumatic Tool Co., Dayton, O., has received a large order for "Dayton" pneumatic chipping and riveting hammers from Sweden. Orders have also recently been received for a number of tools for shipment to England, Italy and Canada, and the company reports a very satisfactory increase in foreign business.

Fires:—

The Morse Machine Shops, owned by the Eastern Steamship Co., Bath, Me., were heavily damaged by fire June 8.

The Exeter Machine Works and the plant of the Page Boiler Co., Exeter, N. H., were damaged to the extent of $5,000 by fire June 9. Insurance is ample.

The plant of the Flour City Ornamental Co., Minneapolis, Minn., was damaged by fire June 7 to the extent of about $10,000, which is fully covered by insurance. The damage was confined to the pattern shop and brass foundry.

The city council of Columbus, O., has passed an ordinance, prohibiting the use of T-rails in improved streets within the city limits and providing for the laying of grooved rails on all such streets. Managers of interurbans entering Columbus are questioning the legal right of council to dictate the style of rail that shall be laid and the matter will probably be taken into the courts.

TRADE PUBLICATIONS.

Sensitive Drills.—The Knecht Brothers Co., Cincinnati, is issuing a 14-page pamphlet describing the Knecht friction sensitive drill.

Oil Filters.—The Burt Mfg. Co., Akron, O. 6 x 9¼ inches. 80 pages. This catalog is devoted to a description of the Burt oil filter and oil filtering system and to the Burt ventilators and exhaust head.

Iron, Steel and Tube Machinery.—The United Engineering & Foundry Co., Pittsburg, has issued a neat pamphlet presenting photographs of an extensive line of iron and steel mill machinery, including rail and merchant mills, plate mills, squeezers, blooming mills, lathes, beam shears, punches, rail straightening machines, rolls, etc.

Reinforced Concrete.—The Inland Steel Co., Chicago, is distributing a 32-page booklet presenting some information about the reinforcing of concrete. The various headings discussed in it are: "Economy vs. Scamp Work in Reinforced Concrete Competitors;" "Mechanical Bond Without Cost;" "A Remarkable Reinforced Concrete Accident;" "Engineering Evolution and Reinforced Concrete;" "High Carbon Steel Reinforcing Bars;" "Data for Estimating Cost of Concrete Reinforcement." This pamphlet also describes the high carbon steel bars for reinforcing concrete made by the Inland Steel Co.

Electrical Equipment.—The Westinghouse Electric & Mfg. Co., Pittsburg. 6 x 9 inches. 24 pages. This pamphlet is the second of a series entitled "Westinghouse Equipment in Railroad Shops," and describes the electrical equipment at the Hornell shops of the Erie railroad, which has recently abandoned mechanical transmission of power and adopted the electric drive at these shops. The Westinghouse company has installed 39 motors ranging in capacity from 6 to 10 horsepower in these shops.

Steam Engines.—The Bates Machine Co., Joliet, Ill. 6 x 9 inches. 36 pages. This catalog is devoted to a description of the Bates vertical automatic high speed engine, which is made both simple and compound in sizes ranging from 8 x 9 to 22 x 20 simple, with capacities ranging from 34 to 428 horsepower and 7½ and 13 x 9 to 19 and 32 x 20 compound, with capacities ranging from 51 to 577 horsepower, non-condensing. These engines are especially adapted for the driving of direct-connected generators, centrifugal pumps and for general power purposes. Specifications of the engines are conveniently presented in tabular form.